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NOTES BY THE WAY—WISE AND OTHERWISE*

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From Hippocrates of Cos to his English successor, Sydenham, is a long cry—a little over 2,000 years; and since the birth of the latter—three hundred years—more advance has been made in medicine than in all the preceding years of human history. So great was the admiration of Boerhaave, the great physician of Leyden, that he never mentioned Sydenham's name without lifting his hat. A writer[1] of an historical retrospect of surgery in 1824 very confidently asserted "that surgery, operative surgery, has now clearly achieved all that can be expected from it." Yet, within the ken of my professional experience, medical science has made its most notable achievements, greater than in all previous times. Hippocrates relied upon the *vis medicatrix natura;* he used but few drugs, and these sparingly. It was a maxim of his "that natural powers are the healers of disease." Galen taught that disease is something to be expelled from the body, a *materia peccans*, that must be eliminated by purgation, blood letting, diaphoresis, etc. "Galen[2] coerced nature; Hippocrates supported her." A happy medium between these two really complementary conceptions is the modern concept of the therapeutics of today. The successes and the failures of our historic past but stimulate to worthy endeavor, and warn against speculative theories and imaginary cures. "Study out the secrets of nature by way of experiment," says Harvey.[3] This is the only safe guide. An instance of false theorizing and fanciful speculative reasoning, leading to absurd therapy with highly imaginative reports of improvement and cure, illustrating the credulity of our profession at times, is seen in the suspension treatment for nervous diseases so popular forty years ago. In a paper[4] at that time, based on many suspensions of tabetics made for me by the late Dr. Gillette, I said that suspension was purely empirical, without a rationale, and rested on nothing more substantial than theory. In none of our cases was there definite improvement. This procedure was used in a variety of organic nervous conditions such as amyotrophic lateral sclerosis, disseminated sclerosis, transverse myelitis, paralysis agitans, etc. Suspension was first suggested by Motchoutkowski and popularized by Charcot. The most encouraging reports came from the French and American experimenters. The English and Germans lagged, both in enthusiasm and results. In fact, Mendel and Eulenburg called attention to the fact that their patients improved more under electro-therapy than under suspension, and stated that they were glad to return to its use. The later discovery of the spirocheta pallida revealed the utter absurdity of this nerve-stretching epidemic and showed that nothing more unscientific, chimerical or ridiculous ever swept over the medical profession.

Thirty-one years ago[5] I called attention to the value of voltaic alternatives in certain forms of atrophy of the optic nerve. Dr. Webster Fox, of Philadelphia, who had also used this form of treatment, said to me that he hesitated to publish his findings; they were so surprising that he felt that the profession would receive them incredulously. I recall one case in which the atrophy was arrested, and a clinical recovery ensued. This patient was under the constant observation of the oculist, Dr. B. F. Graham of Minneapolis, who referred him to me. Unlike suspension, this form of therapy rests on a physiological basis. The reversal of polarity in the constant current has a much more marked nutritional influence than simple closure of the circuit, while rapid reversals greatly intensify its stimulating effects. In order that this might occur with evenness and great frequency, I had an auto-

*Read before the St. Louis County Medical Society, Duluth, June 19th, 1924.

matic commutator designed that admirably accomplished this purpose. Notwithstanding the greater knowledge that has come to us with the passing years, voltaic alternatives, I believe, would prove a useful adjuvant in the treatment of the toxic forms of optic atrophy. Therapy has its fashions. The more dramatic their form, the greater the popular appeal. Static electricity as a mode of treatment is now obsolete. Even the galvanic and faradic currents, aside from diagnostic purposes, have fallen into the discard, much, I believe, to the disadvantage of the patient. Now the d'Arsonval, or high frequency current, occupies the limelight in electro-therapeutics. The most approved form of its application is that known as diathermy. It is said to warm the body tissues. The resistance of these tissues, like that of a wire, generates heat; the greater the resistance, as in passing through a bone, the greater the heat. The value of hot applications is well known, but their effect is confined to the surface, while in diathermy it is claimed that the portion of the body included between the electrodes can be raised to any desired degree of heat, and as heat is fatal to many pathogenic bacteria, it is predicted that this treatment may have a curative influence on diseased parts deeply situated. When the alternations exceed fifteen thousand a second, there is no pain; only an agreeable sensation of warmth. A moderate amperage raises momentarily the body temperature, slightly accelerates the pulse, dilates the blood vessels, and lowers the blood pressure. Its range of therapeutic usefulness includes such conditions as high blood pressure, the functional nervous disorders, pneumonia, rheumatoid arthritis, neuritis, arthritis, angina pectoris, as well as other forms of cardiac disease, neuralgias, and the persistent and intractable pain which occasionally follows herpes zoster. The therapeutic potentialities of diathermia are at present a matter of conjecture; its curative powers are yet to be determined.

The first six years of my professional life in St. Paul were spent in general practice. It was during this period that the city suffered from an epidemic of malignant diphtheria, and occurring before the days of the bacteriological laboratory, there was no possible way of distinguishing between it and tonsilitis, which at the time was widely prevalent. Dr. J. H. Murphy, a well-known St. Paul physician, big of body and humorous of speech, in commenting on the difficulties of diagnosis, remarked that the way he made a diagnosis was to wait and see whether the patient died or recovered; if death occurred, it was diphtheria; if he recovered, it was tonsilitis. Dr. E. J. Abbott at this time deservedly distinguished himself by his great skill and celerity in intubation in laryngeal diphtheria. Practicing medicine today, one cannot fully realize how handicapped we were without the knowledge of antitoxin or the Schick test and von Behring's toxin-antitoxin. Before antitoxin the mortality ranged from 45 to 50 per cent annually; after its use it fell to 10 per cent. From 80 to 85 per cent of the deaths occurred[6] among children under six years of age. The recent illness of some forty school children at Concord and Bridgewater, Massachusetts, following the employment of the latter (toxin-antitoxin) is worthy of mention. The serum had been subject to prolonged cold, and investigation revealed that freezing serum caused a partial dissociation of the antitoxin from the toxin, giving rise to a toxicity which originally was absent; moderate freezing was apparently harmless; after severe freezing of eighteen hours it should never be used (Kelley). Antitoxin itself, under similar conditions, may also lose its potency. Am I too optimistic when I predict that with the universal employment of the Schick reaction and immunization by von Behring's vaccine (in only 5 per cent of the cases is it unsuccessful and has to be repeated) the conquest of this scourge will be an accomplished fact?

It is an interesting coincidence that an immunity test analogous to that of the Schick reaction in diphtheria has been found for scarlet fever. The G. F. and the G. H. Dick reaction[7] is due to an intracutaneous injection of a soluble toxic substance obtained from the culture of certain hemolytic streptococci from scarlet fever patients, which causes a local flushing of the skin. The reaction occurs in patients who have not had scarlet fever and in the early stage of the disease. Branch and Edwards,[8] after using the specific streptococcus filtrate of the Dicks, state that the Dick reaction has seemingly "a specific relationship to immunity to scarlet fever." Dochez[9] reports an antiscarlatinal serum which not only blanches the skin locally in scarlet fever, but materially relieves the symptoms when used therapeutically. The observations of Blake, Trask and Lynch[10] in a preliminary report confirm the findings of Dochez with regard to his scarlatinal antistreptococcus serum, both as to the

rash extinction test and its therapeutic value. Zinger has used successfully, both as a prophylactic and a therapeutic agent, the serum of convalescent and recovered scarlet fever patients. The laboratory we hope, in the near future, will find not only a curative serum, but a protective vaccination as well. A similar immunity reaction in measles, which has a death rate in children third among the acute contagious diseases, is greatly to be desired. Especially is this disease to be dreaded under the fifth year of age. The death rate in New York City in 1922 for children under one to five years of age was 93.4 per cent. Later in childhood the mortality is markedly reduced. In adults it at times assumes a serious virulence. Fortunately, convalescent serum, which fails to protect in less than three per cent of the cases, gives a limited immunity, which, according to Drs. Weaver and Crooks,[11] is about two months. Lasting immunization has yet to be achieved. Notable changes have occurred since those days of general practice. Phlebotomy was then a routine procedure. It was an approved treatment of lues to use an escharotic on the initial lesion and to defer other medication until after the appearance of the secondary symptoms. In my boyhood home in northwestern Ohio, where malaria was prevalent, an ounce bottle of quinine was kept on the table by many, and was partaken of with the same regularity as the meals. Now, malaria, typhoid fever, and yellow fever are practically eliminated, and soon will possess merely an academic interest. That once terrible scourge, epidemic cerebro-spinal meningitis, is a Prometheus bound.

These are only a few instances of what medicine and sanitary science have accomplished. Equally interesting to me is the disappearance of that anemia peculiar to adolescent girls, known as chlorosis, an affection in my observation of not infrequent occurrence, and by no means confined to factory girls and domestics, as certain writers would have us believe, but ofttimes seen or observed where food, fresh air and environmental conditions were far from unfavorable.* Its etiology is obscure, but Campbell believes that "the frequency of the low specific gravity of the blood in apparently healthy women at the age of puberty suggests strongly that chlorosis is an exaggeration of a physiological change occurring in all girls rather than a disease *sui generis*. There are many other changes, structural and functional, which take place at this time, and it is known that they depend on the internal secretion of the ovary. It is difficult to avoid the conclusion that the changes in the blood also depend on changes in the ovary and that it should be considered with diseases of the ductles glands." Fifteen years ago Dr. Richard Cabot wrote, "The disease seems to be dying out." The study[12] of the Guy Hospital cases for the past thirty years is an interesting and illuminating contribution. From this it would appear that chlorosis has steadily declined since 1903. It has been many years since I have seen a case. This caused much conjecture on my part. It did not seem to me that our increased knowledge of disease or our refinements in diagnosis were sufficient to account for this. The passing of chlorosis within about a generation, without any apparent cause, medical or otherwise, is as puzzling as it is notable. This is, however, an outstanding fact, and clearly evident, and shortly this disease will possess only an antiquarian interest.

I wonder how many of you have observed the soporific action of calomel or blue mass in so-called biliousness, which is really an auto-toxemia. Mercury has been greatly abused by careless and indiscriminate administration. The inevitable reaction against it is both unjust and unreasonable and is greatly to be deprecated. For the relief of the insomnia, restlessness, headache, chilling, fever, rapid pulse, vomiting, furred tongue, serous diarrhea, mental sluggishness, etc., incident to these autotoxic attacks, calomel or blue mass affords prompt relief, and gives the patient a night of refreshing sleep. Murchison believes that mercury possesses a double action, that whether or not there is an increased secretion of bile there is more bile passed when mercury is given and an eliminating action is set up, and less of the bile constituents are absorbed from the intestine. I have noticed for years this marked soporific effect. Recently Dr. Tyson[13] has also called attention to this unrecognized action of mercury.

It is worthy of note that 7 per cent of all medical cases are neurological and that three-fourhs of all

*Professor Deneke in The Deutsche Medizinische Wochenschrift (p. 902, July 4, 1924) reports a marked decrease in chlorosis. In 1901 out of 12,000 admissions to the St. George Hospital, Hamburg, there were 201 cases of chlorosis, while in 1923 in 20,000 admissions there were only 3 cases of this disease. It was of frequent occurrence in this hospital up to 1904; the peak having been reached in 1901, with an incidence of 16.2 per thousand. After 1904 there was a rapid decline until the minimum of 0.15 per thousand was observed, in 1923. A striking decline in chlorosis has also been reported in France.

the neurological cases sustain a relation to the major problems in internal medicine (Hyslop). Our present conception of neuropsychiatry is at wide variance with that of even a decade ago. The so-called degenerative diseases of the central nervous system, such as disseminated sclerosis, progressive muscular atrophy, paralyis agitans, etc., are not due to abiotrophy, as was at one time believed, but are the clinical manifestations arising from a chronic infection, probably of a microbic nature. The acute great infections of the central nervous system are epidemic cerebro-spinal meningitis, poliomyelitis, and encephalitis lethargica. The etiology of the two former is known; that of the latter is yet to be discovered. The term functional nervous disease is a misnomer; it is inaccurate and unscientific—a medical myth. All disease manifests a perversion of function. The clinical syndromes of which they are the expression arise from a variety of causes, notably infection, faulty metabolism, ductless gland disorders, anaphylaxis, and focal infections. The psychoneuroses, hysteria, neurasthenia, multiple personality and psychasthenia are not diseases, only clinical syndromes, and are manifestations of disorders of personality resulting from exhausting illnesses, stress, and strain incident to a failure of adaptation to life and environment. "The whole of life," says Herbert Spencer, "is an adjustment —a continuous adjustment of inner to outer relations."

Kraeplin[14] formulated his epoch-making views regarding insanity twenty-eight years ago, differentiating at the time, on the basis of their symptoms, between dementia precox† and manic-depressive insanity. He regarded the prognosis in the former as bad, in the latter as good. Later writers, notably Bleuler, have discounted his pessimistic conception of dementia precox, and have in addition clarified our knowledge of this great subject. Bleuler designated all the adolescent mental disorders, with the exception of manic-depressive insanity, as schizophrenia. In the schizophrenic reaction are included dementia precox, the paranoiac states, hallucinoses, and the abnormalities of personality, all of which spring from an underlying basic degenerative taint. Necessarily, the widely varying factors entering into the schizophrenic reaction present a greatly differing prognosis from that of a classical precox. A dramatic illustration of the part heredity plays in the evolution of insanity is described by Bonhoeffer,[15] who had charge of 10,000 Serbian prisoners during the Great War. Notwithstanding that they were subjected to every form of stress from disease, famine and hardship, there developed in these soldiers only five cases of insanity. It is far from my purpose to discuss the adolescent or any other form of psychosis, but rather to call attention to the great importance of prognosis in insanity, and also to protest against our making as in the past the prognosis depend upon the clinical group in which they may happen to be classified. It is the usual thing after the diagnosis of a dementia precox to shrug the shoulders and say, "Oh, it is a precox—the prognosis is hopeless and therapy futile." Almost universally, medical men believe that after recovery from manic-depressive and schizophrenic psychoses, recurrence and mental deterioration are inevitable. As Rosanoff and Bergman have shown, this is not necessarily so. In their report of eight cases of these psychoses (seven women and one man) in which they followed each individual after-history for thirty or forty years, there was no second attack. The percentage of permanent recoveries, if carefully searched for, would be much greater than we have suspected. This spirit of medical hopelessness is not justified by the facts, either as regards prognosis or hereditary taint. The pessimism of Kraeplin concerning the former, experience fails to confirm, while the studies of Canavon have shown that the latter is not as dominant as commonly believed. An investigation of 381 offspring of dementia precox patients revealed astonishingly few mental peculiarities, 77.4 per cent being normal. It must be noted, however, that in some children the precox age had not been reached.

This archaic conception of the psychoses represents the past, but it is not the attitude of the neuropsychiatrist of today regarding these adolescent mental states. McCarthy believes that a large proportion of adolescent mental disorders get well, and the Trenton workers report from 60 to 80 per cent of recoveries. Prognosis no longer should be governed by nosological grouping. Adolph Myer has pointed out that the old views have "largely failed to bring out the most vital factors," and that the possibilities of the future depend

†At one time the diagnosis of dementia precox was made in almost fifty per cent of the admissions to mental hospitals. Now this occurs in about fifteen per cent of the cases. (Ruggles).

entirely upon the reaction type of the individual patient. Prognosis then lies not so much in clinical types as in the manner of reaction to life conditions and environment. Constitutional tendencies may cloud one's future, but faulty adaptation is by far the greater menace. The basic factor in faulty adaptation is the degenerative taint. The ability to adjust is the index of this inadequacy and a reliable guide in prognosis. In addition to the psychic factor the potentialities of endocrine disturbance and focal infection should not be overlooked. To the general practitioner, this matter of prognosis in insanity is a matter of paramount importance since mental affections are of such common occurrence. In Massachusetts, according to Dr. Vernon Briggs,[16] one out of every ten of the adult population at one time or another during his life requires care in a hospital for mental and nervous disorders. In the acute infections, delirium, especially if there is a high temperature, is of common occurrence. Pneumonia is an exception, for in this disease it is uncommon. When present it may be apparently the only symptom, the actual trouble being revealed only by an examination of the chest. Tyson has reported three cases of acute mania following the crisis. In this affection, the acuteness of the excitement, or its duration, bore no relation to the amount of lung invasion. The pneumonia was of asthenic type. The patients were neuropathic, and were under 40 years of age. The manic state was evidently of a toxic nature and the recovery was rapid, yet it must be kept in mind that, aside from toxic insanity, acute infections can give rise to typical syndromes of manic-depressive and dementia precox types. These psychoses in no way differ from the usual manifestations of these affections, the prognosis being favorable or unfavorable, just in proportion to the way in which the patient had been able to adjust himself to the life requirements prior to the inception of his illness.

I have never been able to understand why trauma* of the central nervous system should receive attention so out of proportion to that accorded other forms of bodily injury. The probable reason is the commercial significance of the nervous phenomena supposedly incident to it. This it is that has stimulated the fervid imagination of the ambulance chaser and the cupidity of the litigant, while the monetary cost arising from this assumption of a greater gravity, baseless aside from certain, not frequent, exceptions, has been staggering. This is the lesser evil, the greater by far being the decay of moral fiber and the loss of personal initiative developed in the social order. Wilson[17] pertinently asks whether the influence of trauma has not been greatly over-rated, and whether there is not a true cause for tumors and degenerations as there is for infections to which the nervous system is liable; also, whether etiologically there can be any real difference between nervous disease and other affections of the somatic systems. The answer to this question is found in the results of recent research which indicate that both the acute and so-called progressive degenerative forms of nervous disease arise from an infective process. A patient suffering from scarlet fever or diphtheria may have experienced a trauma, but no one today would attribute the symptoms to this cause, and it is equally unscientific and fallacious to do so in nervous states which in like manner spring from an infectious source. The degenerative nervous diseases, whether they are manifestations of abiotrophy or infection, pursue a typical course. It makes no difference whether their etiology is undetermined or supposedly due to trauma, the latter being active in only a relatively small proportion of the total number of cases. The wider knowledge of today enables us better to appreciate the true scope and real significance of trauma, the result of which, according to Orbison, lies largely in the money sense.

Trauma can only be regarded as a contributory factor. Can it stimulate a pathogenic activity in a latent or innocuous micro-organism, and why is this pathogenity confined so exclusively to nervous disease? As to its lighting up of a process in abeyance, I think this most improbable. As to a tabes, a paresis, or a multiple sclerosis being due to trauma, this, with our present knowledge, we know to be an absurdity. It is more probably the flaming up of a latent infection which happens to occur coincident with the injury. The old idea of a lessened bodily resistance accounting for the setting up of the morbific process is archaic and unscientific. An illustration of a latent condition springing suddenly to the surface is furnished by Charcot. He states that during the siege of Paris in 1870, a French woman saw her husband's horse return riderless from a sortie. Immediately she

*Fracture or punctured wounds of the skull, fracture-dislocation of the spine or intracranial lesion due to grave trauma do not enter into this discussion.

developed a typical paralysis agitans, which was attributed to fright. The recent studies in lethargic encephalitis have indicated to us quite definitely the pathology of Parkinson's disease, making such an explanation impossible. Fright also used to be regarded as one of the cardinal causes of Sydenham's chorea, which we now know to be due to an encephalitis. Wilson, however, takes a more liberal attitude toward trauma as a contributory factor than my observation justifies. Unless symptoms of paresis or tabes develop within 48 hours after injury, he asserts that there can be no causal relation between accident and symptoms. In true nervous trauma there occurs an immediate manifestation of symptoms (Wilson). I am not in sympathy with the present tendency to confine the effects of trauma to simply functional disturbances. Its assigned rôle, however, has been greatly exaggerated. There has been much acrimonious discussion regarding delayed traumatic apoplexy. In the cable car accident in St. Paul many years ago there was a man about 50 years of age. His health prior to his injury was excellent. Immediately afterwards he developed insomnia, associated with headache, and a distressing neuralgia. About three months after his accident he had an apoplectic seizure. Suit was brought against the street car company. The trial was a battle royal, and bitterly contested. One of the largest verdicts ever given in a Ramsey County Court was awarded him. In those days cerebral hyperemia with a recognized syndrome was accorded a place in nervous nosology. This was supposed to have been caused by the accident and was given as an explanation of his symptoms, and was believed to be responsible for the cerebral hemorrhage. At that time our knowledge of cerebral arterial sclerosis was quite primitive and the significance of blood pressure was yet to be revealed. Schaller reports the case of a man who sustained a head trauma. After an interval he developed typical hysterical symptoms. Subsequently he died from an intercurrent disease. Autopsy revealed a hemorrhage in one frontal lobe. In order to establish a causal relation between trauma and nervous phenomena the symptoms must be continuous from the moment of injury. Can a blow on the head cause a brain tumor? Mendel cites six cases, four personal, two from other sources, in which the question of a possible relation between the head injury and the neoplasm arose (Wilson). My own observations have never suggested to me such a relationship. The countless number of head injuries during the late war would, had it existed, have demonstrated, according to Wilson, such a relationship. He states he has never seen such an instance and that this idea that a head injury can give rise to a tumor is wholly unjustified. While I have never observed any relation between trauma and cerebral tumor, yet between it and a brain cyst the probability of such a relationship the following case would seem to suggest. Many years ago, Dr. Charles A. Wheaton referred a case of epilepsy in a young man to me, apparently traumatic in character. While cutting ice the patient was struck on the head by a crowbar. The immediate symptoms were unimportant. Some six months later he had an epileptiform attack of the grand mal type. After this they occurred with distressing regularity. There were no Jacksonian seizures; the symptoms were characteristically those of an essential epilepsy. The neurological examination was negative, and, since there was no evidence of a focal lesion, I suggested that he be put on the routine treatment for this disease. A year later I again examined him, with negative findings. As treatment failed to control the attacks, I advised exploration over site of injury. Dr. Rogers operated and found a cyst. Recently, Reynolds has reported the case of a girl who was struck on the top of the head by the falling of a heavy screen. The case had been previously diagnosed as an hysteria, in spite of a bulging eyeball and haziness of the nasal margins of the discs. There was in addition some disturbance of sensibility. Operation revealed a well-marked arachnoid cyst across the top of the head. There were no convulsive attacks as in my patient. These, it would appear, depend less on the brain injury than upon inherent nervous instability. "The later falls and injuries," says Clark,[18] "when not the result of unobserved seizures, are but the provoking agents to a convulsive state that seems to have been long hanging fire." Of 241 cases of convulsive attacks due to various causes observed by Ostheimer[19] in ex-service men, 17 per cent were latent epilepsies brought to the surface by war conditions. War was merely a provocative influence, the determining cause being neuropathic tendency. Turner reports that in 18,000 cases of gunshot wounds, or other injuries to the head occurring in warfare, less than 5 per cent developed epilepsy. Holmes and Sar-

gent state that out of 610 cases of gunshot wounds of the head, 6 per cent developed epilepsy. Wilson, in quoting these statistics, says that this percentage is much less than one might expect if trauma played the part usually attributed to it. He commends the opinion of Turner that something more than local tissue alterations are requisite for the production of traumatic epilepsy, and that the determining factor is an inherited or inborn constitutional predisposition to nervous instability and epilepsy. Epilepsy is a syndrome, not a disease. Essential epilepsy is a medical abstraction, not a concrete fact. It is a gratuitous assumption, a theory to explain undetermined etiological factors, probably of many kinds. The distinctive fact to bear in mind is that in epilepsy we are not dealing with a disease but with a clinical ensemble. We have been accustomed to speak of the convulsions in epilepsy as being due to a disruptive cortical discharge, but the experimental work of Pollock[20] would seem to indicate that the ganglion cells of both the brain and brain stem possess epileptogenous qualities.

One of the most difficult problems of all medicine is that of the relation of trauma to functional nervous disorders. The perplexity of the medical mind regarding such nervous manifestations as hysteria, neurasthenia, traumatic neurasthenia, psychasthenia, which, as Wilson aptly remarks, possess neither etiologic, symptomatologic nor terminologic agreement, an inchoate group, is as great as it was thirty years ago, when it was dominated by the teaching of Erichsen and Page, which to us today seems very primitive. It is slow to recognize that we are dealing with arbitrary clinical syndromes that have in fact no existence, not with actual types of nervous disease. These syndromes differ from one another only in degree and depend entirely upon inherent nervous instability and environmental stress. The whole gamut of nervous phenomena develops in this way, and the attempt to pigeonhole it into nervous syndromes in light of the new psychology is most absurd. Experimentally, it has been demonstrated that there is such a thing as spinal concussion. It presents distinctive symptoms such as the lessening or loss of power in the legs, impairment in the organic reflexes; the plantar reflexes may be abolished temporarily or there may occur flexion or extension; the deep reflexes also may be diminished or lost, while conduction of sensation is unimpaired. This may occur, according to Newton, after motor conduction is lost (Wilson). In the slight cases of spinal concussion, it is impossible to distinguish between the symptoms with an organic base and those purely of a functional character. This is a matter of no importance, because in both instances the prognosis is good. After the symptoms of genuine concussion have all disappeared the nervous phenomena may persist indefinitely. This applies equally to all cases associated with trauma where the element of concussion does not enter. This persistence of symptoms is due to the morbidities of the accident complex in the subconscious reflecting themselves through all the activities of the patient. The genuine concussion syndrome is of infrequent occurrence; the great majority of the cases belong to the purely functional class. In these functional states a physical injury may give rise to less disturbance than a psychical trauma. Some of the most marked alterations of personality are observed in the latter. In dealing with nervous phenomena associated with trauma, two things are to be considered: first, the mental factors basic in the evolution of these nervous disorders; second, the psychobiological reaction peculiar to each individual patient. Functional conditions associated with trauma should be termed disorders of personality. The attempt to classify them as in the past as hysterias, etc., is unscientific, confusing and useless. Schaller tells us that at the time of the earthquake in San Francisco, no true nervous disorders (so-called neurasthenia, hysteria, etc.) developed immediately following it, but some time afterward, in the period of meditation and of suggestion, there were many. This incubation period is equally present in all the manifestations of nervous trauma. It is at this time that a psychic evolution takes place on the part of the patient. There enter into this certain dominant factors, such as adequate compensation, suggestions of friends, and the feeling described by Collier that the accident is a valid excuse for a living at the expense of the former employer. Years of observation have convinced me that in the majority of these "Fight for Compensation" cases, as the Germans call them, there is a subconscious fear, due partly to ignorance, largely to misrepresentation of the evil consequences of trauma, commonly associated with cupidity and moral obliquity. These are the genetic influences, the dominant mental factors in evolution of the so-called trau-

matic neuroses. It is not the initial injury but the injury complex from which these patients suffer. Until recently the medical attitude towards these functional troubles has been that of the court room, and therapeutic results as unsatisfactory as the verdicts of the jury. Either the physician has accepted at full value the patient's interpretations of his symptoms, thus crystallizing and perpetuating the "accident complex," or he has regarded these disorders as imaginary or purposely assumed for a monetary consideration, never for a moment visualizing the great significance of the psychic factor in personality. The springing up of the cults was inevitable, a protest against medical obtuseness and short-sightedness. These differing viewpoints not only are unscientific but are unfair to patient and physician alike, representing as they do the opinions of the past thirty years; they now are archaic and obsolete. Functional nervous diseases either arising from or independent of trauma are the manifestation of what Mott calls genetic inadequacy. They may be regarded as a defense reaction because of the inability of the individual to adapt himself to living conditions as they arise from day to day, and the degree of their severity depends upon the way they have succeeded in their life adjustments. It is the psychobiological conception that enables us to estimate not only all the forces but the handicaps as well that are active in the making of personality. And it is through an intelligent perception of these facts that by explanation, therapeutic suggestion, moral suasion, and kindly sympathy—psychotherapy at its best—that we can change the attitude of the patient toward himself, orient him properly, and substitute normal mental reactions for the abnormal. Positive therapeutic results are obtained which at times are almost startling. One of my patients recently referred to her own case as a neurological conversion.

Several years ago a Montana ranch-man, a typical precox, was brought to me. His illness followed immediately an accident—a runaway—in which he was thrown from the buggy, a wheel passing over his head. Several members of his family had been insane. Trauma did not cause this psychosis; it was latent and brought to the surface by the injury. Observation teaches that trauma, exposure, stress and exhausting illness are simply contributory factors. The real cause is genetic inadequacy; without it insanity would not occur. The experience of Bonhoeffer's Serbian prisoners and the countless gunshot wounds and head injuries of the late war confirm this assertion. The irritability, apathy, depression, alterations in character and associated abnormalities sometimes observed in head injuries and attributed to pathological cerebral changes induced by them, we now know indicate a latent schizophrenia which traumatism has changed from a potential to a dynamic state.

In my final note I shall discuss sleep as a menace. Michael Foster's definition that sleep is a "blank and a gap in the history of the mind" is old, but not obsolete. Of the many explanations of sleep the electric theory of Duval,[21] the toxic theory of Pieron, the sarcolactic acid theory of Pryer, the cerebral asphyxia theory of Fluger, the anemic theory of Howell, the fall of blood pressure of different writers, are the more important. The most recent, the most notable, the most promising, is that of the Russian School.[22] The cortex, according to this, is the seat of two contending activities—excitation and inhibition. Our behavior represents a balance between these two. "Sleep is a spontaneous irradiation of inhibition over the cortex."

There are some chapters of my professional life I would gladly rewrite, especially those relating to disturbed sleep and terrifying dreams. In many instances these experiences are so distressing that patients regard the coming of night with apprehension, often with terror. They resort to every subterfuge to fight off sleep. This action on their part has seemed to me until recently unreasoning—the senseless vaporings of one lacking in proper nervous control. There are certain medical facts common to all. We know that vitality is at its lowest ebb in the early morning hours and in grave illness it is at this time that death is most likely to occur. Schneider, in a total of nearly 58,000 deaths, found that its occurrence was most usual between 4 and 7 A. M. Watson and Finlayson, dealing with the records of nearly 18,000 deaths, placed the highest mortality between 5 and 6 A. M. (MacWilliam). We know that in normal sleep there is a lowering of blood pressure, a slowing of respiration, circulation and glandular activity, a reduction of bodily temperature and of metabolic processes with a diminution or loss of the reflexes. Different observers record a definite fall of blood pressure varying from 15 to 30 mm. Hg. at the

end of two hours' sleep, rising again in the latter part of the night. In hypertension, Brooks and Carrol have noted a fall of 44 mm. after 2 hours' sleep, to rise on waking to 22 mm. We know that the recumbent position, because of the hydrostatic factor, unless there is a fall in the aortic pressure, increases the tension in the cerebral arteries. The use of the pillow under certain pathologic conditions is a wise provision, both for comfort and safety. There were some things regarding this that until Prof. MacWilliam[23] of Aberdeen published his researches we did not know. We did not know that disturbed sleep and dreams raised the blood pressure and caused grave heart irregularities. Sleep to me has meant quiescence, rejuvenation, restoration of bodily and mental capacities. I had not realized that under certain pathologic conditions it was a tragedy. Sleep, aside from dreams, may be disturbed in various ways. Afferent impulses passing along the pathway of the vegetative nervous system from thorax, abdomen and pelvis are perturbing influences of real import. The emotional tone of our complexes is most disturbing, according to Cannon; it increases the adrenal tide and causes an abnormal reaction. A dream is psychic energy unleashed, without control, acting at caprice. It is the resultant of suppressed complexes or some dominant recent experience manifesting itself in the activities of the subconscious when consciousness is in abeyance. In sleep[24] the barriers between the conscious and the subconscious are lowered and these activities rise into consciousness, causing dreams. This invasion of consciousness may be light and leave no memory, or it may lessen the integration of personality so as to leave a dim or vivid memory. A nightmare is a dream dynamic. Freud's theory of dreams is a mental phantasy, ingenious, but unconvincing. When dreams are associated with the somatic impulses traveling sympathetic pathways, their tendency to raise the blood pressure, disturb heart action and rupture cerebral arteries is greatly intensified. When called in the night to see a patient who has had a cerebral hemorrhage, there has arisen in my mind, as in yours, the question asked by Sir Samuel Wilks many years ago, and never answered, "Why should this have happened during sleep?" The same inquiry, says MacWilliam, applies to pulmonary, gastro-intestinal hemorrhages and sudden death in supposedly healthy persons, all of which frequently have a similar incidence. Had the hemorrhages or death followed emotional stress or muscular strain, the explanation would be apparent, but occurring at a period when systolic pressure is low and arterial tension at a minimum, their occurrence would be inexplicable, were it not that MacWilliam has demonstrated the influence of disturbed sleep and dreams in the causation of hypertension and grave cardiac irregularities, which, occurring in persons with cardio-vascular disease and a weakened myocardium, are sufficient to cause the hemorrhages, anginal attacks or fibrillation of the ventricles. A vivid dream, according to him, may cause a marked rise in the blood pressure with associated circulatory and respiratory disturbances in persons all out of proportion to that caused by ordinary exercise, as in walking, cycling, slow ascent of stairs, mental stress or muscular strain gradually taken. While these somatic accidents are exceptional, the fact that they do occur should ever be kept in mind. All pernicious afferent impulses should be prevented, if possible, and emotional stress eliminated, ever keeping in mind the words of Brutus, "Since Cassius once did whet me against Caesar, I have not slept." In a large majority of our patients, arterial degeneration and myocardial insufficiency does not obtain, but in them the resulting nervous manifestations are nevertheless most distressing. We can be of real service by an intelligent perception of the relation of sleep disturbances to their nervous symptoms, by extending a kindly sympathy, not censure, as in our ignorance we have too commonly done, by guarding the pathway of the vegetative nervous system, by correcting endocrine unbalance and by estimating at their full value the psychic factors that upset the physiological processes in the brain cells. We can in this way correct an hitherto unrecognized clinical condition and by instilling peace and calm in the place of anxiety and unrest, order will spring out of chaos and thus, by a tardy justice, we save our medical souls.

In closing these notes, a quotation from the Harveian Oration of 1923 describes more happily than I am able to do the progress made by medicine during the span of my professional life. "I feel," says Prof. Starling, "that I have had the good fortune to see the sun rise on a darkened world, and that the life of my contemporaries has coincided not with a renaissance but with a new

birth of man's power over his environment and his destinies unparalleled in the whole history of mankind."

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THE KETOGENIC DIET IN THE TREATMENT OF EPILEPSY*

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A preliminary report[4] on the use of a ketogenic diet in the treatment of epilepsy was published recently, and included the results of such treatment in seventeen cases. Of the fifteen patients from whom reports had been received, ten had been free from attacks for from two months to one year, four had shown remarkable improvement, and one had not responded favorably to the treatment. It is proposed at this time to present the further progress of the fifteen patients, and to report the results in the treatment of five additional patients.

The ketogenic diet, as described in the report mentioned,[4] consists of a large amount of fat with minimal amounts of carbohydrate and protein. Its object is to produce a ketosis evidenced by acetone and diacetic acid in the urine. The total calories should not exceed the actual metabolic requirements of the patient. The basal metabolic rate (determined directly, or calculated from the DuBois normal standards) is obtained, and the allowance of food is made to equal 130 to 150 per cent of the basal caloric exchange of twenty-four hours. After a few days of gradual carbohydrate restriction, the patient is put on a diet of from 10 to 15 gm. of carbohydrate a day, 1 gm. of protein for each kilogram of body weight, and sufficient fat to supply the remaining caloric requirement. Provision is made for the vitamines and salts. This diet is not well tolerated if started abruptly.

Newburgh and Marsh proposed a similar diet in the treatment of diabetes mellitus. These authors fed adults diets of carbohydrate, 14 gm., protein, 10 gm., and fat, 90 gm., the total calories amounting to 900 or 1,000. After the urine was sugar-free, the diets were further modified to carbohydrate, 15 to 20 gm., protein, 28 gm., and fat, 140 gm. Some of these patients have been on the high fat diets for more than four years.

Marsh and Waller showed that the lipemia in diabetes was diminished when the patients were fed high fat diets. Thus, in spite of the ingestion

*Read before the Northwest Pediatric Society, August 2, 1924, Rochester, Minnesota.

DIET 1, 967 calories (carbohydrate, 50 gm., protein, 25 gm., and fat, 71 gm.)

Breakfast	*Gm.*	*Dinner*		*Supper*	*Gm.*
Fruit, 10 per cent,		Clear broth	1 cupful	Bread, white	10
Strawberries	100	(no food value)	*Gm.*	Bacon, weighed uncooked	10
Bread, white	10	Roast beef, lean	26	Vegetable, 5 per cent,	
Egg (1), soft boiled		Vegetable, 5 per cent,		Asparagus	100
Butter	4	Tomatoes	50	Fruit, 10 per cent,	
Milk, whole	100	String beans	50	Orange	60
		Fruit, 10 per cent,		Butter	4
		Peaches	100	Cream, 40 per cent	50
		Butter	4		
		Cream, 40 per cent	50		

DIET 2, 990 calories (carbohydrate, 39 gm., protein, 21 gm., and fat, 80 gm.)

Breakfast	*Gm.*	*Dinner*		*Supper*	*Gm.*
Fruit, 10 per cent,		Vegetable soup*	1 cupful	Bacon, weighed uncooked	15
Orange	100		*Gm.*	Vegetable, 5 per cent,	
Bread, white	10	Vegetables, 5 per cent,		Spinach	100
Egg (1), poached		Lettuce	50	Fruit, 10 per cent,	
Butter	9	Cauliflower	50	Peach	20
Milk, whole	100	Fruit, 10 per cent,		Butter	4
		Pineapple	50	Cream, 40 per cent	50
		Cheese, American (pale)	10		
		Butter	5		
*See Recipe 14, Diabetic Primer.		Cream, 40 per cent	50		

DIET 3, 1,019 calories (carbohydrate, 20 gm., protein, 20 gm., and fat, 92 gm.)

Breakfast	*Gm.*	*Dinner*	*Gm.*	*Supper*	*Gm.*
Fruit, 10 per cent,		Bacon, weighed uncooked	10	Egg yolk	1
Orange	50	Olmsted bran cake	1	Vegetable, 5 per cent,	
Olmsted bran cake*	1	Vegetable, 5 per cent,		Spinach	100
Omelet (1 egg)		Celery	25	Olmsted bran cake	1
Butter	6	Tomatoes	75	Fruit, 10 per cent,	
Cream, 40 per cent	35	Fruit, 10 per cent,		Peach	30
		Strawberries	30	Butter	6
		Butter	7	Cream, 40 per cent	30
		Cream, 40 per cent	35		
*See Recipe 9, Diabetic Primer		Diabetic jello	60		

DIET 4, 1,017 calories (carbohydrate, 10 gm., protein, 18 gm., and fat, 97 gm.)

Breakfast	*Gm.*	*Dinner*		*Supper*	
Fruit, 10 per cent,		Clear broth	1 cupful	Clear broth	1 cupful
Orange	25		*Gm.*		*Gm.*
Egg (1), scrambled		Chicken, roast	24	Bacon, weighed uncooked	20
Butter	6	Vegetable, 5 per cent,		Vegetable, 5 per cent,	
Cream, 40 per cent	50	Celery, weighed uncooked	50	Lettuce and tomatoes	50
		Butter	5	Butter	5
		Cream, 40 per cent	50	Cream, 40 per cent	50

of abnormally large amounts of fat, there is no increase in the blood fat.

The work of Newburgh, and that of Wilder and Winter, demonstrates the practicability and relative harmlessness of greatly restricted carbohydrate diets for diabetic patients. Since patients with epilepsy have no evident metabolic disorder, they are even better equipped to metabolize food mixtures such as those here suggested.

Miss Foley, dietitian at the Mayo Clinic, has

submitted sample diets which demonstrate the method of carbohydrate restriction. Attention is also directed to the sample diets given by Newburgh and Marsh.

If desired, the butter allowed in the diet may be added to the clear broth. Saccharine diabetic flavoring and water may be added to the cream to make a more palatable beverage.

Every diet prescription must be created for the individual, varying as do prescriptions for diabetic patients. Patients are given the diet prescription, and then sent to the Diet Kitchen to consult the dietitian, who carefully instructs the child or his guardian as to the purpose of the diet. A Diabetic Primer, which is used as a textbook, is supplied. The general principles of the diet are outlined the first day; then classes are held in which the weighing of food is demonstrated, and the patient given an opportunity to become familiar with the weight and composition of foods, the weight of the servings, and the allowances of carbohydrate, protein, and fat. After several such lessons, the patients or guardians are required to work out sample diets.

Ten patients have now remained free from attacks for periods varying from five to fifteen months. Of the four patients who, at the time of my previous report, had shown marked improvement but not complete relief, two (T. F. and G. K.) have now been entirely free from attacks for three months. The other two patients are still subject to occasional convulsions. One of these, who has had severe mental trauma, suffers from hysteria; it has not been possible to learn whether the ketosis is present in the other patient. The father of the latter has been under treatment for syphilis. The one patient who has shown no improvement is a post-encephalitic, undergoing mental degeneration (as mentioned in the preliminary report).

Five new patients, ranging in age from four to ten years, have been on the ketogenic diet for more than one month. All five, three with petit mal, and two with both petit and grand mal, are entirely free from convulsions. The two latter patients are also receiving luminal.

Five patients, including T. F. and G. K. already mentioned, did not respond immediately to the ketogenic diet, in spite of a severe ketonemia. These patients, therefore, were put to bed on a starvation diet, consisting of three to five oranges a day and water *ad libitum*. After one week of such starvation, the attacks ceased and the children were again placed on the ketogenic diet. They have remained free from further attacks; T. F. and G. K. have been free for three months each.

All of our patients, except T. F. and G. K., have remained healthy and strong. These two boys each had one gastro-intestinal upset, during which they refused all food for several days. G. K. became weak and lost weight. They were given general diets with restricted carbohydrate, less than 50 gm. a day, for one week, and were then put back on the ketogenic diet. Both remain free from attacks. All of the other children have gained weight, and are reported to be very active mentally.

One patient, R. E., remained on the ketogenic diet for two years; during this time he had three grand mal convulsions. Each attack was preceded by a break in the diet. The last attack occurred fifteen months ago. He was put on a general diet nine months ago, and has had no further difficulty.

J. C. had three attacks during the first two weeks on the diet. Six months later he was given a ratio of 2:1 ketogenic to antiketogenic molecules, and is now approaching a general diet. He has had no attacks for ten months.

CONCLUSIONS

The results of treatment with the ketogenic diet in twenty cases of epilepsy, nine of petit mal, six of grand mal, and five of grand and petit mal, are given. Three of the cases may well be omitted, because the convulsions are better explained on an organic basis. The remaining seventeen patients are now on the diet, and acetone and diacetic acid are evident in the urine. These seventeen patients are entirely free from epileptic convulsions. The most favorable results have occurred in cases of petit mal.

Studies of the blood chemistry have not been completed.

The treatment of epilepsy with the ketogenic diet has given excellent results, and should be given a thorough trial.

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SPREAD THE PROPAGANDA FOR HEALTH

The purpose of the American Medical Association in publishing *Hygeia* is to give authoritative information to the public about matters of health. The more widely such information is disseminated, the better. Therefore the reprinting of items from *Hygeia* by newspapers, magazines or reputable publications of any sort is welcome.

A clip-sheet is prepared each month containing "boiled down" summaries of the articles appearing in the issue of the magazine for that month. The clip-sheet will be sent promptly and regularly to any newspaper requesting it, or to any Fellow of the Association who will undertake to interest the editor of his local newspaper in reprinting items from the clip-sheet or from the magazine. It is expected that mention will always be made that the item is from *Hygeia.*

The Fellows of the American Medical Association to whom the Bulletin is sent can be of great service in extending the propaganda for health by this means. The physician practicing in any community is better qualified than anyone else to select those items of health propaganda that will be of the most interest and importance to the people of his locality at a given time. He should have little difficulty in convincing the editor of the local newspaper of the advantage of printing such health items, sometimes, perhaps, with added comment to fit the article to local conditions.

Send for the Hygeia clip-sheet, and use it.—A. M. A. Bulletin, Dec., 1923.

ANOTHER FULL-TIME STATE SECRETARY

The Michigan Medical State Society, at its annual meeting at Mt. Clemens, amended its constitution and by-laws to fix the annual membership dues at $10. This was done to provide for the employment of a full-time secretary and to enable the society to extend its work and increase its usefulness. Thus the Michigan State Medical Society has again recorded itself as an organization that refuses to stand still or even to move slowly in discharging its recognized duties to its members and its state. It may be confidently predicted that the results attendant on this progressive action will entirely justify it and that the benefits to be derived will not be long in being realized.

Since the West Virginia State Medical Association recently provided for a full-time secretary, too, there are now at least nine state associations with full-time secretaries: Massachusetts, West Virginia, Virginia, Wisconsin, Ohio, Texas, Missouri, California and Michigan. Pennsylvania has a secretary and a full-time executive secretary.—*A. M. A. Bulletin, October, 1924.*

REMINISCENCES OF THIRTY YEARS AGO*

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Mr. President, and Gentlemen:

When called upon, by the program committee, to prepare a paper for this evening, I spent considerable time trying to select a suitable subject. And realizing that the scientific subjects could be handled very much better by other members of the society, I finally decided to go back thirty years and give you some of the impressions, made upon the "callow mind" of an interne, which time has failed to efface.

We hear and read daily of the wonderful work being done by the leading men of the profession today, but do we ever stop to think that they are only carrying on, a little farther, the work begun thirty or thirty-five years ago by those pioneers, some of whom it is my intention to mention tonight. The advances made in laboratory facilities and the use of the *x*-ray have made the matter of diagnosis exceedingly simple as compared with the methods in vogue at the time about which I am writing. The men of that day had to depend upon touch, sight and hearing together with a good knowledge of human nature and a large amount of common sense in arriving at a diagnosis. Yet, I stand ready to affirm that, with only their limited facilities, their work compares favorably with that being done today, and in some respects excelling a considerable amount of what is called surgery as we see it now. Did you know that the first operation, performed in this country, for the removal of a goiter was performed by Dr. Knute Hoegh of Minneapolis more than thirty years ago? That the first cholecystotomy in the state was done by a St. Paul surgeon, Dr. Justus Ohage, more than thirty-two years ago?

I could enumerate a number of operations, which are quite common today, that were performed by these pioneers in surgery and with very little difference in technique. However, I am not going to give you a scientific dissertation on the surgery of thirty years ago as compared with that done today, but am going to give you some of the personalities of a few of the surgeons with whom I came in contact while serving my internship at St. Joseph's

*Presented before the Northern Minnesota Medical Association, Duluth, August, 1924.

Hospital, St. Paul, in 1893. This was during what may be called the antiseptic period of medicine, as more attention was paid to antisepsis than asepsis. Dr. W. W. Price was the leader in the introduction of asepsis, but it had not, then, been generally adopted in the west.

The first man I am going to mention is Dr. J. H. Murphy. He was of the "old school," a graduate of Rush Medical School at the time they turned out finished M.D.'s after a twelve weeks' course, to get the most of their training on their fellow men. He soon enlisted, after graduation, in the U. S. Army and served as a surgeon throughout the Civil War. At the time I first met him he was surgeon for four railroads and of one was surgeon-in-chief. He worked only on the extremities, as the abdomen was a *terra incognita* to him. He was a large, portly man and always wore a Prince Albert coat with a high silk hat. If he did not get what he called laudable pus in a wound after operation something was the matter. When an accident case from the railroad shops came in, Dr. Murphy usually arrived before the ambulance. Hurrying into the emergency operating room, he would take off his coat, roll up his sleeves and, opening his old kit bag, extract from it a large rubber apron, which he would don. Then he would fish out an old operating case and take from it a large scalpel, two or three needles, a spool of silk thread and one or two pairs of artery forceps and a pair of scissors, all of which he would lay out on a small table near the operating table. Then, scalpel in hand, he would go out in the hall and wait for the patient to arrive. He would then, as soon as the patient was asleep, start in cutting and fixing up the injury. Our surgical nurse, who was a graduate of the Presbyterian Hospital of Chicago, would stand by with the nozzle of a 5-gallon irrigator full of a bichloride solution and turn the stream on the field of operation until the wrath of the doctor would rise and he would tell her to turn off that squirt gun as he did not want to be drowned. Finishing the operation he would tell us to put on a dressing and would himself wipe his instruments on his sleeve and return them to his bag ready for another emergency. As a prognostician he was excelled by few. He was a kindly old gentleman, who knew his limitations, but was too old to adapt himself to the new order of things. One other incident in connection with Dr. Murphy and I will pass on to others. When he was taken with the illness which resulted in his death, he called a consultation of all the leading doctors in the Twin Cities. They decided that an operation for the relief of the carbuncles with which he was afflicted would have to be performed and left it to him to select the operator. He chose an eye and ear man to do the work.

We had an unusual opportunity at St. Joseph's to observe the different methods illustrative of the different countries in which the doctors had received their training. From Norway we had the brilliant Dr. Harold Graff, whose post-operative care of his patients could not be excelled. He once told me that he had spent ten years intensive study in the hospitals before he ever attempted to operate. His death was as dramatic as his life was erratic. I can well remember the deputy coroner calling me up and asking me to assist him at an inquest and, upon arriving at the place, being told that Dr. Graff was the subject. The body was lying on a couch and nearby stood a table, with a large hypodermic syringe, not quite empty, lying on it. Upon examining the body we found that he had carefully injected cocaine solution into the skin over the heart and then had thrust an amputating catlin into that organ, causing instant death. Whiskey and domestic trouble proved more than he could stand. Among the doctors educated in Germany we had Dr. Justus Ohage, who was as jealous of his reputation as a young girl of her first beau. He was and is a skillful operator and performed a large number of gallbladder operations, several resections, and made common use of the "Senn" bone plates in those years. Dr. Arnold Schwyzer, still living, was and is a surgeon from whose work the very best can derive many valuable lessons. An exceptionally fine pathologist, and clever operator, I would advise all of you gentlemen never to neglect to see him work, if you have the opportunity. Dr. Canac Marquis, educated in Paris, exhibited all the excitable tactics of the French. His motto was, "Cut and tie afterwards." He was a bold and a bloody operator, yet one could not help but admire his fearlessness in his work.

I now come to the men educated in America. Alex J. Stone, M.A., M.D., LL.D., was well known internationally as well as in this country, as one of the leading gynecologists. He was considered in the class with Sims, Munde, Thomas and some others. He was one of the wittiest, as well as one of the best clinical instructors of his day. He was

always ready to extend a helping hand to assist a needy student or brother practitioner, and was one of "God's own noblemen." The world is the better for his having lived. An instance illustrates his interest in the students. At some time in his earlier career, he met with an accident, a horse falling with him and dislocating his leg at the hip. It was not replaced for some time for some reason and afterward he could, by a sudden twist, dislocate it again. I have seen him voluntarily do this painful procedure, before a class of students, to illustrate upward and backward dislocation for their benefit. Dr. Archibald MacLaren,* known to you all, was at this time coming into his own and by his careful, scientific methods advancing to the place he holds today. He was the coolest man that ever leaned over a patient on an operating table. Nothing could excite or hurry him. Always exact and by his follow-up methods keeping in touch with his cases after they had left his hands, he was able to correct details in technique and profit by his experience. You can no longer wonder at his success.

The last of the St. Paul men I am going to mention, as I have not the time nor you the patience to listen to a detail of the various specialists, is Dr. C. A. Wheaton. When he was a young man he was employed as baggageman on the Milwaukee R. R., and, while on a hunting trip, was accidentally shot in the hip. He very nearly bled to death before assistance could be obtained. This made such an impression on him that he resolved to study medicine, which he forthwith did. Graduating from Harvard Medical College, he became professor of anatomy in the St. Paul College of Medicine, which position he held until its affiliation with the University. He there laid the foundation for his skill as a surgeon. He became the leading surgeon in the state and his services were in great demand. He had a great personality and could inspire confidence in the most despondent patient. Always jealous of his reputation, he never left any loopholes for trouble to creep in. He watched the progress of his assistants just as carefully and never left any stone unturned to perfect them in their chosen field. Many a young doctor can point to the foundation of his success in the instruction received from him.

Among the Minneapolis surgeons with whom I came in contact while a student in the office of Dr. James H. Dunn, I will mention Dr. Knute Hoegh, a graduate of the University of King Fredrick, Norway, in 1859. He practiced at several points, finally locating in Minneapolis, where he enjoyed a very large practice. He was an exceptionally good diagnostician and more than an average surgeon. He was a very witty man and his sallies were so unexpected. To illustrate, while temporarily acting as interne at St. Mary's Hospital, it was my painful duty to inform him one morning, upon his arrival at the hospital, that one of his medical cases had died during the night. He stood for a moment or two, then said, "My medical cases are in the hands of the Lord; but my surgical cases I have something to say about them." On another occasion, when in consultation with a very young doctor, noting the anxiety on the part of the young man, he took him by the shoulder and said: "Ninety-five per cent of all medical cases will get well without any medicine, and I have my doubts of the other 5 per cent." He had a very bad temper which he never tried to control, and which very frequently got him into bad predicaments. Once, his assistant having forgotten to bring from the office a certain instrument which he needed, he let himself loose, abusing everyone present; the hospital interne faced him and told him not to say anything to him or he would shove his fist down his throat, that he had always treated him as a gentleman and expected the same from him. Dr. Hoegh looked him up and down and said, "I guess you can do it, I apologize," and everything was lovely again. While with Dr. Dunn I witnessed an unusual performance, namely, four separate operations, performed by four surgeons on the same patient at the same time. The patient belonged to Dr. Hoegh. She had tuberculous enlargement of the glands in both groins and in both sides of the neck. Owing to her weakened condition, the patient could not stand a prolonged operation, or more than one, so Dr. Hoegh secured three of the leading surgeons to help him. Dr. Dunn and Dr. J. E. Moore operated on the groins while Dr. Dunsmoor and Dr. Hoegh operated on the neck. The patient lived. Dr. Hoegh was a born clinical instructor and it was unfortunate that petty jealousy of one or two men kept him off of the staff at the University. He used to hold private clinics to which he invited a few students and I am sure they will never forget the large amount of valuable instruction he

*The death of Dr. MacLaren occurred Oct. 12, 1924.

gave them. Dr. J. E. Moore, or "Little Dr. Moore," as he was called to distinguish him from Dr. J. T. Moore, was at this time an orthopedic surgeon. He was very rapid in his work. I have seen him amputate a leg when it took only forty-five seconds from the time he made his first incision until the limb was severed and he was ready to tie the arteries. Some record! It was always a pleasure to see him work.

Dr. James H. Dunn, with whom I served a term while a student, was probably the finest diagnostician in the Northwest. He was thoroughly prepared for work in his chosen field, and had rare good judgment. He often said it was not how, but when to cut, that counted. His continued hard study and the extremely large amount of work he did, proved too much for his delicate physique, especially after a narrow escape from death from blood poisoning had weakened him. The profession lost one of its most valuable members when he dropped dead at the meeting of the American Medical Association at St. Louis.

I have mentioned only a few of the leading men of thirty years ago, for there were many more. These men worked under a great handicap. Dr. Boeckmann had not invented his sterilizer which revolutionized the preparation of dressings. Nor had he perfected his process for sterilizing by dry heat, upon which the surgeons of today depend for sterilization of ligatures and sutures. Silk was used almost exclusively for buried sutures and they very often caused trouble. The catgut ligatures prepared in those days by immersion in a strong antiseptic solution had a tendency to break, the antiseptics destroying the strength, and they were not always sterile. The mortality among the operative cases was very little higher than now. I will say in conclusion, that we should honor the memory of these pioneers in surgery, and may we all profit by the good work performed by them.

Gentlemen, I thank you for your kind attention.

THE FORTHCOMING U. S. PHARMACOPEIA

The committee elected in May, 1920, for the revision of the United States Pharmacopeia has practically completed its work. The responsibility for the scope of the new book was placed on the twenty-one physician members of the committee so that the new edition should be more fully representative of the therapeutically valuable drugs than formerly. The number of medicinal substances to be included in the book is less than 650.—*(Jour. A. M. A., Sept. 20, 1924, p. 923.)*

THE USE OF FULL THICKNESS SKIN GRAFTS*

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Free, full thickness skin grafts have been used for many years, but, owing to the low percentage of good results following their use, a great many surgeons have gradually abandoned them. On removing the dressing from three to four days after operation the graft usually appeared to be doing well, but in a few days it gradually began to grow dark, and ultimately sloughed.

Keller first called our attention to the value of large, full thickness skin grafts, emphasizing the use of dental modeling compound as one essential in obtaining even pressure over the graft. Parce, in 1922, working with Keller, reported eight cases, and pointed out the use of such grafts in scars and contractions about the arms and feet following war injuries. In one of his cases a graft was applied to an anus after the removal of an epithelioma.

Fig. 1 (Case A460282). Ectropion of the lower lip from a burn.

Fig. 2 (Case A460282). Postoperative. A full thickness skin graft has been inserted after a portion of the mucous membrane, as well as the scar, has been excised.

We have used full thickness grafts around the face and neck whenever there was sufficient supporting tissue to allow firm pressure after operation, such as in filling in the defect after excision of scars, or following the excision of an inactive basal cell epithelioma if a plastic closure was not

*Read before the meeting of the Northern Minnesota Medical Association, Duluth, August 4-5, 1924.

possible, in correcting ectropion of the lips, and in grafting the distal end of a pedicled flap if a double epithelized flap was essential, as in reconstructing the nose, cheek, or lower lip. We have also used the grafts in replacing large, pigmented, hairy moles on the face, and by means of a rubber

Fig. 3 (Case A463452). Low grade epithelioma of the forehead and bridge of the nose.

Fig. 4 (Case A463452). Postoperative. The epithelioma was excised and immediately replaced with a full thickness skin graft.

tube, in lining scarred-down nostrils. Usually they have been applied to clean wounds, but when used in correcting ectropion of the lower lip, slight secondary infection has sometimes occurred, due to the location.

Local anesthesia is used, as a rule, except for children, both in removing the graft and in preparing the area to be grafted. At first it was feared that the local anesthesia might interfere with the success of the graft, but the grafts do as well with local anesthesia as with general.

The area to be grafted must be freed from fat as much as possible, so that on the neck it is best to get down to muscle or some such tissue to make a bed for the graft. In order to render the area to be grafted as dry as possible, the vessels are pinched off with forceps and the oozing controlled with hot sponges. Very little catgut is used, as it tends to prevent the accurate approximation of the graft to the underlying tissues. The margin around the area to be grafted is undermined so that it may be approximated accurately with the margin of the graft.

Small grafts for the face can be best obtained from the posterior cervical region, as the color of the skin is more like that of the face than that in other parts of the body. The larger grafts are taken from the thigh or upper arm. Round or oval grafts are more accurately approximated to the margins of the area to be grafted. The full thickness grafts, the thickness of the true skin, are dissected with a knife and cut as thin as possible, care being taken to avoid fat. If small areas of fat are attached to the graft, these are cut away with scissors. If hair-bearing skin is to be used, a deeper graft is necessary, but the chance of success is not nearly so good as with the usual thin, full thickness graft. The graft is cut as nearly as possible the size of the area to be grafted so that in its new position it will be under normal tension. A pattern of the area to be grafted may be made with rubber tissue, or it may be measured. We have used grafts as large as 7.5 cm. in diameter, but it is not advisable to use larger grafts on account of the difficulty in maintaining even pressure over the entire area. It is better to apply several small grafts at different times than to attempt a large one, especially on the neck. The graft is sutured in place accurately with dermal sutures, and is not perforated. Several layers of gauze, about 1.5 cm. in thickness, just a little larger than the graft, are applied and firm pressure made by means of adhesive plaster, thus splinting the graft in its new position.

The dressing is not touched for ten days, and then, in order not to disturb the graft, is removed carefully in layers. As a rule, the graft will have adhered perfectly, and require no further treatment. The wound is left open to the air and protected for

Fig. 5 (Case A460095). A dark pigmented scar of the cheek from a burn.

Fig. 6 (Case A460095). Postoperative. The greater part of the scar was excised and replaced with a full thickness skin graft.

a time with a wire mesh basket. If the graft is applied over the malar bone, the forehead, or the bridge of the nose, a small slough may occur over the most prominent bony point if too much pressure is applied. Sometimes one or two small

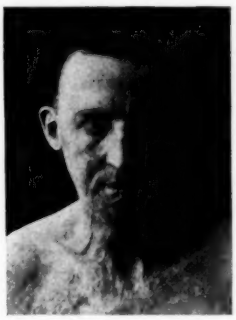
superficial areas may slough and make it necessary to dissect them off; these areas will epithelize themselves. If this technic is followed, the greater number of full thickness grafts will be successful.

Fig. 7 (Case A234391). Scarring of the neck and chin from a burn. Note the very short neck.
Fig. 8 (Case A234391). Patient six years later, following the use of radium and full thickness skin grafts over the neck. Later a full thickness skin graft will be used to correct the ectropion of the lip.

We have found that dental compounds, applied directly to the graft, tend to macerate it, and therefore we prefer the gauze. Blair uses silk sea-sponge for pressure. The sponge is applied moist, and when removed is quite dry and hard. Davis recommends silver foil and dry gauze, or gauze kept moist constantly with salt solution, or a flexible paraffin mixture such as ambrine. He believes that the area should be immobilized until the blood supply of the graft is assured, and the parts protected from trauma for about six weeks.

If the area to be grafted is on the neck, the patient is kept flat on his back for at least ten days, with shot bags on either side of the neck, which aid in keeping the part absolutely immobilized. It is not advisable, as a rule, to try full thickness grafts on the necks of very young children because of the difficulty in keeping the part quiet for the necessary period, but if they are attempted, the child should be put in a Bradford frame.

Full thickness grafts, in suitable locations, have certain definite advantages over the pedicled flaps. As a rule, the patient is in the hospital about ten days or two weeks, whereas if a pedicled flap is used, the hospitalization period is usually from six weeks to two months, the full thickness graft saving the patient much time and expense. Also, there is much less possibility of infection, as the operation is done in one stage. The tissue lies flat and is under tension in its new position, whereas in the pedicled flaps the tissue is usually thickened like a pillow. Full thickness grafts have certain advantages over Thiersch grafts when used in locations in which they are indicated. They give much more body to the pedicled flaps than the Thiersch grafts, preventing them from drawing up on themselves. Around the face the cosmetic result is much better, the color and the thickness of the skin being more like the surrounding tisue. In some cases there is slight pigmentation for the first few months, but in most cases the color is so nearly normal that ultimately it is difficult to tell the graft from the surrounding tissue (Figs. 1 to 10).



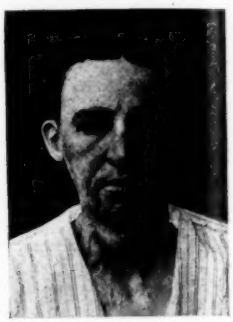


Fig. 9 (Case A437320). Scarring of the neck and ectropion of the lower lip from a burn.
Fig. 10 (Case A437320). Postoperative. A full thickness skin graft has been inserted in the anterior part of the neck, after excision of the scarring. Part of the mucous membrane of the lower lip, as well as a portion of the skin, has been excised and replaced with a full thickness skin graft to correct the ectropion.

CONCLUSION

Full thickness grafts are of definite value if used on the face and neck where firm pressure can be applied. The essential points are: (1) a clean, dry wound, free from fat, (2) a graft free from fat, the same size and shape as the area to be grafted, (3) accurate suturing of the graft. (4) firm pressure applied with gauze for at least ten days, and (5) immobilization of the parts during this time.

Did you ever stop to think that the names of diseases and the names of flowers are very similar? For instance, I might say, "Do come and see my garden. It is at its best now, and the double pneumonias are really wonderful. I suppose the mild winter had something to do with that. I'm very proud of my trailing phlebitis, too, and the laryngitises and deep purple quinsies that I put in last year are a joy to behold. The bed of asthmas and malarias that you used to admire is finer than ever this summer, and the dear little dropsies are all in bloom down by the lake, and make such a pretty showing with the blue of the anthrax border behind them!"—From *Madame Claire*, by Susan Ertz.

A RATIONAL AND SIMPLE METHOD OF FEEDING CHILDREN DURING THE FIRST TWO YEARS OF LIFE

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When one considers the great rapidity with which growth occurs normally during the first two years of life and also the prevalence of nutritional and gastro-intestinal disturbances during this period, the importance of the proper supervision of the diet of young children becomes apparent. It is physically impossible and probably not desirable for this important phase of preventive medicine to be undertaken exclusively by the few physicians limiting their practice to pediatrics. Undoubtedly the vast majorty of mothers must rely upon their family physician for common-sense supervision of diets for their children. This affords the physician an opportunity to exert an educational influence in his community which should result in better and healthier babies. It is undoubtedly highly desirable that young mothers and also those with experience should obtain information regarding the care of their children from the informed and experienced physician rather than from a well meaning but uninformed neighbor or friend.

Physicians rendering very high-class service in general practice have informed us that in general they give better service to sick infants than they do to well babies, and feel that a simple outline of feeding for children during the first two years of life would equip them to offer well baby care to their patients. The purpose of this paper is to attempt to meet this need.

Mother's milk is undoubtedly the safest and most satisfactory food for the infant during the first few months of life, and every physician should do his utmost to encourage maternal nursing. In general, clock-like regularity of the frequency of nursing is desirable, and for the majority of infants the four-hour interval between nursings proves very satisfactory and entirely meets the needs of the infant. In some instances, however, shorter intervals between nursing periods prove more satisfactory, although it is seldom necessary to put the baby to breast oftener than every three hours. As a rule, if the physician instructs the mother to nurse the baby at stated intervals, to awaken it if necessary when the feeding time comes, and not to feed the baby when it cries, the instructions are followed.

For convenience and simplicity in the feeding directions outlined in this paper the four-hour interval is adopted. The same schedule, however, may be adopted when dealing with infants fed more frequently by merely adjusting the hours at which solid foods are given.

In general, four to six hours after birth the baby is taken to breast and permitted to nurse for twenty minutes. As a rule only one breast is nursed at each feeding, and in most instances after lactation is established sufficient milk is obtained from one breast to meet the infant's needs. If the baby is weighed every five minutes while nursing, one finds that the greatest amount of milk is obtained during the first five minutes. After twenty minutes at the breast very little or no milk is obtained, and if weighings are continued at five-minute intervals the surprising discovery is made that the baby actually loses slightly in weight. This loss results probably from the fact that the infant obtained nothing at the breast, and during this interval lost a measurable amount of fluid by evaporation from the skin and also through the expired air. If the physician tries this experiment he will soon be convinced that nothing is accomplished by permitting the infant to nurse much longer than twenty minutes. The normal baby receiving an adequate amount of breast milk will thrive when fed every four hours, permitting only five feedings in twenty-four hours. Many infants will sleep the entire night without nursing between ten P. M. and six A. M. However, if the baby requires a night feeding it should be permitted. Under normal conditions the baby may be fed exclusively on mother's milk until six months of age. After this age the following schedule may be followed:

SIX MONTHS

6 A. M.	Nurse
10 A. M.	Farina or cream of wheat; nurse
2 P. M.	Nurse
6 P. M.	Farina or cream of wheat; nurse
10 P. M.	Nurse

Cook cereal three hours, season with salt and add a little sugar.

Feed cereal thick, starting with one teaspoonful and increase gradually to three or four tablespoonfuls twice daily.

SEVEN MONTHS

6 A. M. Nurse.
10 A. M. Farina or oatmeal; nurse
2 P. M. Carrots, spinach, swiss chard, peas or cooked head lettuce; nurse
Cook vegetables until tender, season with salt and strain; do not throw water away. Start with one teaspoonful and increase gradually to 3 to 5 tablespoonfuls
6 P. M. Farina or oatmeal; nurse
10 P. M. Nurse

EIGHT MONTHS

6 A. M. Nurse
10 A. M. Cereal, toast, buttered, 5 to 6 ounces of boiled, whole cow's milk
2 P. M. Carrots, peas, spinach, chard or head lettuce. Baked potatoes, meat broth with fat skimmed off, vegetable soup; nurse
6 P. M. Cereal, toast, buttered, five to six ounces boiled, whole cow's milk
10 P. M. Nurse
At eight months start weaning gradually by omitting two nursings

NINE MONTHS

6 A. M. Nurse
10 A. M. Any cooked cereal, toast, six ounces boiled cow's milk
2 P. M. Carrots, peas, spinach, head lettuce, Swiss chard, tomatoes (cooked), asparagus tips, vegetable soup, baked or mashed potatoes, stewed prunes, baked apple or apple sauce. Six ounces boiled milk
6 P. M. Cooked cereal, toast, six ounces boiled milk
10 P. M. Nurse
At nine months the 10 P. M. nursing may be omitted in many instances

TEN MONTHS

7:30 A. M. Cereal, toast, prunes, six to seven ounces boiled milk
12:30 P. M. Cooked carrots, peas, spinach, Swiss chard, head lettuce, string beans, asparagus tips, cauliflower, tomatoes, celery, Brussels sprouts, baked egg plant, vegetable soup, meat broth, baked apple, apple sauce, baked or mashed potatoes, six to seven ounced boiled milk
Do not permit any morning lunch between 7:30 and 12:30
3:30 P. M. Orange, toast or zwieback
6:30 P. M. Cereal, vegetable soup, toast, six to seven ounces boiled milk
The majority of babies may be weaned at 10 months of age

TWELVE MONTHS

Add stewed peaches, apricots, apple butter, jam, baked banana, rice, scraped, or ground beef

FIFTEEN MONTHS

Add bread and butter, jelly, jello, cottage cheese, junket, bacon, fried crisp. At fifteen months of age vegetables do not need to be strained

EIGHTEEN MONTHS

Add roast beef, veal or lamb chop, mutton stew, sweetbreads, chicken and other fowl, broiled veal liver, fish, salmon, scraped raw apple. Do not give ham or pork or cured meats

TWENTY-TWO TO TWENTY-FOUR MONTHS

Add poached or soft boiled eggs, simple cookies, desserts containing eggs, tapioca, custard, bread pudding

The above method of feeding children, with minor alterations, is in general use in Minneapolis. Readers undoubtedly will notice that it differs in some details from methods which they employ successfully. The purpose of this paper is not to offer this schedule as the only method of properly adjusting the diet of infants, for the one and only method of feeding normal children does not exist. The adoption of this or some similar systematic plan of directing the diet during the first two years of life is recommended, however, to enable the physician to employ a rational simple and tested method for "well baby care" which will promote proper nutrition and good health for his young patients. At first the physician not accustomed to directing the diet of infants may find reference to the schedule necessary, but with continued use

of a systematic plan, outlining the changes from month to month becomes as easy and commonplace as writing a simple prescription. After thorough familiarity is obtained as to the results obtained through systematic supervision of the diet, the physician will find that through this growing experience, modifications of this simple schedule may be made to meet practically all his needs.

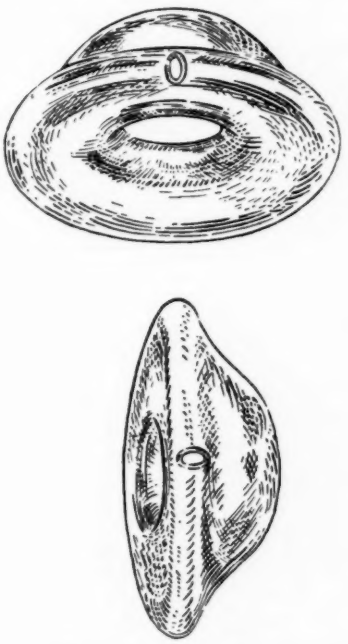
Probably the most common alteration of the dietary regime to be made is the addition of cereal to the diet before the sixth month, for Farina may be given safely as early as the second month, or earlier. In this manner the giving of artificial milk mixtures, which often encourage weaning the baby, may be avoided, and moderate deficiencies in the amount of breast milk may be offset by the simple administration of cereal.

Various other modifications of the diet schedule may also be profitably made when dealing with individual cases, and success in feeding babies will increase with growing experience on the part of the physician in the early addition of solid foods to the diet.

Even under the most favorable circumstances, however, one must occasionally resort to complemental feedings, for which simple dilutions of cow's milk often suffice. For advice as to advisability of using milk mixtures the mother undoubtedly should rely upon the directions of her physician rather than upon directions printed upon the containers of proprietary artificial foods.

The difficulties confronting maternal nursing are almost too numerous to mention, although attention may be called to the solution of a few of these problems. The practice of examining the quality of breast milk is obsolete. A thorough and complete analysis of breast milk in individual cases would undoubtedly consume so much time that by its completion the child would have attained the age of weaning. One can more profitably direct his efforts in determining the maximum amount of milk the individual mother can supply her baby by weighing the infant before and after nursing. If the amount obtained at the breast is inadequate to permit a gain in weight of four to six ounces each week when given both breasts at each feeding, the breasts should be expressed by hand after nursing to make certain that they are completely emptied. Incomplete drainage of the breast favors a diminution in the milk supply if continued over several weeks. Where the baby nurses vigorously and completely empties the breast only a few drops of milk may be obtained by manual expression. In such instances, the continuance of breast expression is probably of no benefit and not advisable.

Occasionally, considerable breast milk is lost from dripping from the nipple between nursing periods. This may be prevented by wearing glass nipple shells (Fig. 1) collecting this milk in order that it may be given to the baby by bottle or spoon after nursing. The glass shells are applied to the breast with the nipple projecting into the aperture provided for this purpose and are held in position by means of a binder applied snugly around the chest. This very convenient device should be used more widely, for not infrequently patients collect from six to eight ounces of milk daily in this manner. After the third or fourth month of lactation the loss of milk from the breast usually ceases.



GLASS NIPPLE SHELLS

FIG. 1

To promote a maximum supply of breast milk, mothers should indulge in a generous diet without restriction and should be free from worry. In addition, a two hours' rest in bed in the afternoon

and an early hour for retirement at night is advisable.

An insufficient supply of breast milk is no excuse for weaning a baby. Under such circumstances, the infant should receive every drop the mother can supply and be given enough additional food to make up whatever deficiency exists.

In conclusion, it is recommended that all physicians engaged in general practice adopt some simple, rational, tested method of outlining the diet for young children and train their patients to rely upon their own doctor for "well baby care."

In his presidential address before the American Medical Association last June, Dr. William Allen Pusey devoted himself to the subject of the limitation of population, and brought to the support of an argument for birth control most of the familiar facts about the impossibility of supporting the population of the future on the land of the present. "If no effort is made at birth control," said Doctor Pusey, "nature will take charge of the situation by eliminating those less able to resist." Continuing his argument, he cited the contention of the economists that those people inherit the earth who multiply most rapidly, and that fecundity increases inversely according to the individual's position in the social scale. It seemed to him, as it has seemed to others, that this means the downfall of modern Christian civilization, with the triumph of the misery and degradation of Asia. "I particularly desire," he concluded, "that the mistaken impression should not go out that I mean to say that medicine now has any satisfactory program for birth control. It has not."

In the tomes of the ardent economists, biologists, sociologists and philosophers who favor birth control, the eager reader will also search futilely for any practical program, or, indeed, for any practical method. His disappointment will not, moreover, depend entirely on the fact that our government, either wisely or unwisely, has made unlawful the dissemination of such knowledge as is available. The fact is that none of the students of the problem, not even the physicians, have ever perfected any method of birth control that is physiologically, psychologically and biologically sound in both principle and practice. Not, of course, that devices for the prevention of conception do not exist; it is well known that they do, and that they are easily available to almost any purchaser in any drug-store in America. The difficulty lies primarily in the imperfection of the devices themselves, and in the peculiar psychology of that lower stratum of society which the birth-control enthusiasts insist must be brought to the light, lest its descendants inherit the earth.—*Morris Fishbein, The American Mercury.*

THE HISTORY AND PRESENT STATUS OF THE NON-SURGICAL TREATMENT OF HEMORRHOIDS*

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The non-surgical treatment of hemorrhoids is not new. It has been described and used for many years. It is only new in the sense that the profession as a whole has very little real knowledge concerning it. The first method of non-surgical cure advanced was that of electrolysis. This procedure originated in Germany over a hundred years ago, but with the advent of aseptic surgery was more or less forgotten. Sir Charles Ball of Dublin later described the method and in 1891 an article by Newman appeared in the Journal of the American Medical Association. As far as I can ascertain, this is the first reference to the subject in American literature. More recently very comprehensive papers have been published by C. C. Mechling of Pittsburgh and H. E. Dunne of Washington. The injection method of treatment is of American origin. In fact, in Europe it is frequently known as the American method. It dates back to 1891, when it was first advocated and employed by a Dr. Mitchell of Illinois. Since that time, more particularly in the last ten or fifteen years, there have been numerous descriptions of the method appearing in both domestic and foreign medical publications.

That the method has not been more widely adopted is in my opinion due to two factors: first, a lack of adequate information concerning the treatment, and, second, to prejudice which has been handed down from one medical generation to the next. When the injection method was first devised the profession as a whole gave it but little attention and waited for the proof of time. Unfortunately, the quacks were quick to see that the people in general would welcome any method which was said to cure with little pain and without operation. Literally hundreds of irregulars went about the country making preposterous claims and injecting all who came their way. They were frequently unscrupulous and of little medical attainment. Their knowledge of rectal diseases and asepsis was

*Presented at the meeting of the Northern Minnesota Medical Association, Duluth, August, 1924.

limited. The natural results were numerous complications and some deaths. The remarkable thing is that even under these conditions numerous cures were produced.

Had there been any considerable number of ethical physicians practicing proctology at that time no doubt the matter would have received thorough investigation and its real value determined. Unfortunately, this was not the case. Rectal surgery was being done almost entirely by the general surgeons. None of them saw any great volume and regarded it as of rather minor importance. Therefore, they performed the routine operation which gave fairly good results and gave the matter no further investigation. Of the non-operative treatment they had little real knowledge. They saw only the cases where the results were bad. Basing their conclusions on these and upon the type of men employing the non-surgical method they condemned it. As they were also teaching proctology in the medical colleges they passed their opinions on to their medical students, who, of course, took the statement for its face value. Thus, without adequate investigation, this idea was spread through the whole profession.

However, time produces changes. An increasing number of reputable medical men began to limit their practice to proctology. Medical colleges, recognizing the need of more thorough instruction in this field, began to offer courses in rectal diseases. The courses offered were (and still are) inadequate, but they were an improvement. More thorough research was made in rectal diseases. Many old theories were exploded. Among other matters investigated was the non-surgical treatment of hemorrhoids. It was found to have real merit and in the past ten years has grown greatly in favor. This real increase in interest probably dates from a paper given by Dr. Terrell of Richmond in 1914, in which he advocated the use of quinine urea hydrochloride. Since that time it is safe to say that, insofar as the American Proctologic Society is concerned, at least 80 per cent of its members use it to a greater or less extent.

Briefly stated, just what is the principle of the non-operative methods? A hemorrhoid is in a general way the same as an angioma or nevus elsewhere in the body. It is like a sponge filled with water. When the blood is squeezed out of the plexus of veins which composes it there is very little tissue left. Thus anything which occludes or destroys the blood vessels shrinks the hemorrhoid to almost nothing. Only a little ridge of scar tissue is left. This method of cure can be used only in the case of internal hemorrhoids. The cure can be produced by two non-operative procedures, which I will briefly outline.

The first is electrolysis. The direct current is employed. A dispersive pad is placed on the abdomen and then one or more needles connected with the opposite pole inserted into the hemorrhoid. Either the positive or negative pole may be used. From three to fifteen milliampers of current is allowed to flow from five to thirty minutes. The pile turns a gray white color, at which point treatment is discontinued. One or two treatments suffice to cure each hemorrhoid. I have used this method in a number of cases but have practically discarded it for the injection method. My reason for this is that the injection method is much more rapid and in my experience has been less disagreeable to the patient.

Of the injection method there are two variations. The first I speak of only to condemn. That is the injection of strong solutions (usually carbolic acid) for the purpose of destroying the hemorrhoid and causing it to slough. I consider this a dangerous practice. It is the older method and the one from which most of the complications and deaths were reported. It is impossible to limit the extent of the destruction of tissue, and infection, abscess and secondary hemorrhage are complications which may occur. For these reasons I never employ it.

The other method consists of the injection of less strong solutions into the hemorrhoids. The purpose of these is to produce enough irritation so that the blood vessel is occluded by the resulting scar tissue, thus curing the hemorrhoid. I have tried various solutions and believe that it makes very little difference what solution is used, provided that it is just strong enough to produce the required reaction without producing a slough. A solution of 20 per cent carbolic acid is recommended by Morley and most of the older formulas contained this drug in from 5 to 50 per cent. To the phenol has been added fluid extract of ergot, olive oil, glycerine, witch hazel, creosote, zinc chloride, salicylic acid and many others, either alone or in combinations. These I think are entirely unnecessary, but were added to suit the whim of some individual who probably did not

know himself just what action they produced. The phenol is the active agent and is sufficient.

At the present time quinine urea hydrochloride in from 5 to 10 per cent solution is probably being used more extensively than any other solution. This was first advocated by Terrell of Richmond, Virginia, in 1913. This drug produces the desired result. It is practically non-toxic and, in my experience, less likely to cause pain than the phenol solutions. I have seen one patient who had an idiosyncrasy for quinine made quite ill by one injection and have had a few patients who complained of roaring in the ears. Otherwise, I have seen no complications caused by the drug itself. The technique of these injections is relatively simple. The internal hemorrhoid is brought into view through a slotted speculum. The surface is swabbed with alcohol and from .25 to 1 c.c. of solution injected deep into the center of the pile near its base. The number of hemorrhoids treated at one time and the interval between injections is governed by the reaction produced.

I have used this method of treatment in approximately 1,200 cases, charity and private. One patient had a severe reaction due to an idiosyncrasy to quinine. There have been several cases of superficial sloughing. This was caused by too much fluid being injected and too near the surface. In these, three were followed by secondary hemorrhage, but in each instance the patient, contrary to advice, allowed himself to become constipated. There have been no deaths and the end results have been uniformly good. From these cases and those reported by other men doing any considerable amount of rectal work, I cannot but feel that it is really less dangerous than the usual operative procedure and that the results are fully as good.

In conclusion then, what can be said concerning the non-surgical treatment?

1. It is an old method which even in the hands of incompetent men produced some good results.

2. In the past ten or fifteen years it has been adopted by the majority of men specializing in rectal diseases.

3. From reports of these men, the method in selected cases gives fully as good results as the usual operative procedure.

4. Conservatively speaking, it is at least no more dangerous than the operative procedure.

5. It does not confine the patient to bed or keep him from his ordinary occupation.

6. Many sufferers will submit to this method of treatment when they refuse operation.

7. By refusing to use this form of treatment where possible, we drive our patients into the hands of incompetent and unscrupulous quacks to the detriment of both the patients and our profession.

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THE SCIENTIFIC AMERICAN ON ABRAMS' "ELECTRONIC REACTIONS"

In October, 1923, the Scientific American announced that it was undertaking an investigation of the "Electronic Reactions of Abrams" and electronic medicines in general. The Scientific American has published twelve papers and the last has now appeared. The result of the exhaustive investigation of the committee may be summed up: The electronic reactions of Abrams and electronic medicine in general is found utterly worthless. This is expressed a little more in detail in the opening paragraph of the last article: "The so-called Electronic Reactions of Abrams do not exist—at least objectively. They are merely products of the Abrams practitioner's mind. These so-called reactions are without diagnostic value. And the Abrams oscilloclast, intended to restore the proper electronic conditions in the diseased or ailing body, is barren of real therapeutic value. The entire Abrams technique is not worthy of serious attention in any of its numerous variations. At best, it is all an illusion. At worst, it is a colossal fraud." —*(Journal A. M. A., Sept. 20, 1924, p. 939.)*

INDICATIONS FOR SURGERY IN DUODENAL ULCER*

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The diagnosis of duodenal ulcer having been established its treatment becomes the issue. A long controversy has been waged as to the proper ways and means of management; neither the medical nor the surgical exponents have been lacking in weighty evidence for their respective fields, nor in damaging array of statistics against their opponents. From this it is obvious that while both branches have had their successes and their failures a co-operative method of studying and caring for these cases should aid both internist and surgeon, with increased benefit to the sufferers.

There are various reasons for this divergency of opinions as to the treatment, because of the very nature of the disease. From the anatomical viewpoint the lesion is hidden and consequently cannot be actually verified except by surgery. Again the condition itself is often characterized by a tendency toward cyclic manifestations; that is, periods of exacerbation and remission, thereby often lending great weight to conjectures, even though wrongly placed. Again the symtomatology of duodenal ulcer can be in part or wholly simulated by pathological changes elsewhere. This paper acknowledges the presence of errors in diagnoses in our series of duodenal ulcer in spite of a routine method of investigation consisting of an exhaustive history, physical examinations, roentgen studies, laboratory studies and numerous subsequent therapeutic checkups.

Once a diagnosis has been reached with the methods available today the immediate management of the case presents. It is our observation that relatively few are surgical at the outset, surgical in the sense that the ulcer itself or its symptoms are demanding of immediate operative intervention. This does not apply to surgical treatment of co-existing or probably better, pre-existing lesions such as infections of tonsils, teeth, sinuses, pelvis, etc. Operative treatment of these should not be classified as surgery of the ulcer per se, though their proper handling may be indispensable in the medical management of the ulcer.

*Read before the Northern Minnesota Medical Association, Duluth, August, 1924.

Further, it has been our observation over a period of ten years during which time approximately eleven hundred cases of duodenal ulcer have been studied, that the greater portion of the ulcers demanding surgery are those who have had little or no care either in the way of removal of these co-existing infective processes or in proper medical supervision; that is, the patients who are surgical are largely those who are chronic sufferers in whom the lesion has wrought marked or permanent changes in the digestive tract.

Accordingly we have placed the majority of all cases on medical management admitting that a variable number of these will become surgical because of various factors entering into the individual case which the internist alone cannot hope to cope with. In properly selected cases it has been fairly demonstrated that a carefully planned systematic medical regime over a sufficient period of time will give the desired results in a large percentage. By results is meant that the patient shows a response to medical care, by freedom from pain and discomfort, return to satisfactory weight level, a regaining of strength so that the patient may carry on his vocation, and lastly, absence of previous ulcer symptoms. These should be attained early in the management and be maintained indefinitely.

While duodenal ulcer is classified as a clinical entity one may also consider it one of the manifestations of an infective process, the ulcer producing the greater train of symptoms. While the etiology of duodenal ulcer is as yet unsettled, we feel that the clinical evidence leans toward the theory of infection and its resultant toxemias. Because of this and because of the otherwise betterment of the general health surgery may be called upon to aid in the removal of foci of infection, these blocking the management until eradicated. That infection may play a most important role is further evidenced by the periodicity of the exacerbation—a plausible explanation being the variance of resistance versus virulence.

The cases to be surgically treated will be those for whom such management was not deemed advisable at the time first seen and those who failed to obtain relief under careful medical direction. These cases will be found to aline themselves into several main groups, namely:

1. Those suffering from obstruction to the food current, due to stenosis, cicatrices, adhesions, etc.
2. Those with, or attempting, perforation.

3. Those with associated intra-abdominal lesions.

4. Those with repeated hemorrhages.

5. Those where a question of malignancy enters into consideration.

6. Those suffering repeated exacerbations despite thorough and complete medical management.

7. Those who for various reasons cannot or will not submit to a medical regime over a sufficient period of time.

A patient's working conditions or his economic status cannot in themselves be classed as reasons for considering surgery prior to a carefully planned management, although the patient's inability to co-operate may decide and offer but one solution, namely, operative intervention. Neither is a recurrence of previous ulcer symptomatology necessarily proof of medical inability to control the condition. It is not the number of breakdowns that alone determine for surgery, but the degree of intensity with which the patient and physician have carried on.

The marked tendency toward chronicity in duodenal ulcer in itself may be but a further manifestation of hidden or unlocated causative forces which if recognized and removed would ultimately favor a complete recovery. The pathologists inform us that healed ulcers of the duodenum are often seen. That nature needs but little aid—but this often and prolonged—is well shown by the immediate improvement seen in a majority of these cases as soon as management is instituted. Cases that do not show immediate response should be looked upon with suspicion as to the reliability of the diagnosis. If further studies reveal the presence of ulcer it is well to consider the possibility of associated lesions entering the picture.

The point so often heard that duodenal ulcer patients break down eventually regardless of medical efforts is, we believe, of no great argumentative value. Granted that a number do relapse, this point is no more applicable to duodenal ulcer than to many other clinical entities in which the relief of a train of symptoms is not necessarily proof of their inability to recur.

The consideration of these cases then who for various reasons do not respond medically should constitute the surgical aspect of duodenal ulcer. Surgery, while of undeniable benefit, and in fact the only salvation in some types of ulcer, should be much as a court of last appeal, or better, as an adjunct to methods previously applied.

No mention has been made of those cases of duodenal ulcer in whom other pathological processes have developed to advanced stages, as for instance, duodenal ulcer complicated by diabetes, nephritis, marked cardiac or vascular disease, etc. The handling of these cases will of necessity depend upon the picture as presented by the individual patient.

The detailed technical phases of the various operative procedures will not be gone into at this time, however, a consideration of the pre- and post-operative periods are worthy of both the internist's and surgeon's attention. Too great emphasis cannot be placed on the preoperative preparation of these people. Especially is this true of the chronic sufferer who has had increasing obstruction with corresponding lowering of general health and often in addition concomitant lesions in other vital tissues. When first seen they are often markedly dehydrated, toxic, malnourished and in no way capable of withstanding the additional taxation involved by surgical intervention. Here is probably the greatest opportunity for actual co-operation of internist and surgeon. It is remarkable how responsive these otherwise poor surgical risks are to preoperative preparation consisting essentially of alleviation of pain and discomfort, absolute rest, re-establishment of balance of body fluids, etc., to the extent that in a short time one can feel safe in assuming their resistance has more nearly approached the normal, thereby lessening the operative hazards.

The question of the choice of anesthesia, while always one of great moment, is of special import in many of these subjects. In suitable cases, local anesthesia offers much to the patient's ultimate benefit; in fact, it may be the only method by which the necessary surgery can be safely attempted.

In considering the numerous types of operative procedure for relief of duodenal ulcer it will be found that all methods can be grouped under two main headings, namely:

1. Those in which the removal of the diseased area is the essential.

2. Those in which increased gastric drainage or shunting of the food current is the primary object.

From these two basic principles numerous modifications and combinations have evolved. It is

necessarily so in view of the manifold variations in the character of the lesion, as to size, location, extent of involvement of adjacent tissues, associated pathology in other organs, etc.

It is at once apparent that no one procedure will be applicable to all cases, the selection of the time and method of repair determining to a large extent one's successes.

The importance of the preoperative period has been briefly outlined. The operation passed, the postoperative care presents. This should be immediately instituted, the internist insisting on the same detailed supervision and this over a period of time comparable with that of an ulcer medically treated.

The purpose of medical education is to provide for the present and future citizens of the country the best medical care, service, and attention that is possible under the circumstances. We are not doing this today. And we are not likely to do this until we realize the faults in our present system of medical education.

Just now the story is making the rounds that there is a shortage of medical men. Nothing could be further from the truth. The fact is that the medical profession as a whole, and particularly of the cities, is greatly overcrowded. Seventy-five per cent of the medical men of Chicago could easily do twice as much work as they are actually doing, and should do twice as much and have twice their present incomes, if they are to get a fair return on the money invested in their education. The real difficulty is a faulty distribution as to location and the prevailing tendency of medical schools to turn out more and more specialists and fewer and fewer general practitioners. As a consequence of the above, the residents of some of our rural districts are in danger of soon not getting the kind of medical service which their ordinary ills require, for fully ninety per cent of human ills can be best treated by a well-trained general practitioner. My contention is that the medical schools of today, particularly the ultra-scientific medical schools, do not properly supply the demands of the times and that the education offered and the text-books used are extremely faulty. The medical schools must first realize their shortcomings, then deliberately make an effort to fulfill the function for which they are primarily created, namely, the education of general practitioners of medicine. The education of the specialists should be left to properly constituted post-graduate medical schools and hospitals. Every medical student should first of all be given the opportunity to become an efficient general practitioner, and then later, after having had five years or more of experience in the general practice of medicine, if he shows special fitness and a desire to become a specialist, the post-graduate schools and hospitals should offer the opportunity.—*E. H. Ochsner, M.D., Illinois Med. Jour., June, 1924.*

THE CHOICE OF METHOD IN BLOOD TRANSFUSION*

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Blood has, since time immemorial, aroused the interest of mankind. Certain savages believe, to this day, that by drinking the blood of a particularly courageous enemy they will be endowed with his virtues.

The idea of the intravascular introduction of the blood of another, while representing a much higher mental development, is still centuries old and antedates Harvey's discovery of the circulation. The first recorded attempt is probably that of the Jewish physician in attendance upon the last illness of Pope Innocent VIII in 1492.[1] He employed three small boys as donors, all of whom died and without benefit to the patient.

Transfusion between animals was actually accomplished in 1665.[2]

Little of a really constructive nature was done in this line for several centuries. With the stimulus to surgical progress offered by the work of Pasteur and Lister the subject again came into prominence and many were the methods employed when intravenous injection was found to be feasible. At this time premature clotting of the blood offered one of the greatest obstacles to the successful completion of the procedure. To avoid this it became popular to use defibrinated blood for injection. The excess of fibrin ferment present rendered the blood highly toxic in itself and when it is remembered that at that time blood groups were not dreamed of, we may well imagine that when disaster did not follow, results were at best indifferent. It must also be recalled that at this time the indications for transfusion were as vague as the technique was uncertain and it was advocated as a cure for any and every condition from simple anemia to senescence.

It has remained for the present century to see blood transfusion changed from a dream to a practical procedure of recognized clinical value and a few well recognized indications have supplanted the innumerable uses of an earlier day.

The entire feasibility of the procedure was first demonstrated through the advances in blood-vessel

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*Read before the Ramsey County Medical Society, St. Paul, March 31, 1924.

surgery made by Murphy, Crile and Carrel, who were able to join the artery of one person to the vein of another so as to permit the unobstructed flow of blood from donor to recipient. The last link in the chain of safety was forged by Moss[3] and Jansky, whose work on blood grouping placed the human race in four groups dependent upon serologic interaction between blood and corpuscles.

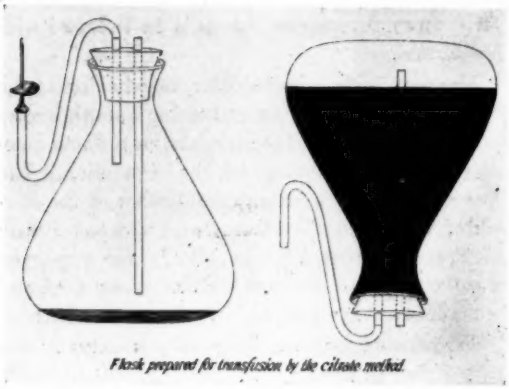


Fig. 1. Flask arranged for citrate transfusion. This contains 2 grams of sodium citrate dissolved in 50 c.c. of water. When mixed with 500 c.c. of blood the concentration is 0.36 per cent. The cork is loose on withdrawing blood. A pressure bulb is attached to the longer piece of glass tubing and used to force the blood into the recipient.

These studies showed the reason for the severe and sometimes fatal reactions which had occurred with such painful frequency in the early days of transfusion and pointed the way to safety.

Transfusion by blood-vessel suture left but one thing to be desired, namely, the ability to estimate accurately the amount of blood which passed over. This is a thing which is of great importance and impossible of performance unless the blood is taken momentarily into some measuring device before reinjection into the patient. Present-day methods have been devised primarily to overcome this difficulty and it is with them that this paper deals. They may be included under three general heads and while many modifications of unimportant details exist at different clinics, the list is increased only by sub-groups. Singularly enough, the three methods were reported in three successive years and one depending upon chemical alteration of the blood to prevent coagulation while the other two deal with unmodified blood.

The first of these is the so-called citrate method of Lewisohn,[4] who made use of the fact that blood containing a small concentration of sodium citrate, usually 0.2—0.25 per cent, does not clot. So far as the original purpose, namely, the maintenance of a fluid state in the blood, is concerned, the citrate method is above reproach, as it may stand for hours or even days without clotting. At this point, however, the desirability of the method ceases, as later investigations have shown that in it, clinical value is sacrificed to convenience. After the method first came into use, reports came from all sides of so-called "reactions" which appeared within the following twenty-four hours. These consisted of a rise of temperature, with or without a chill, and evidence of hemolysis such as hemoglobinuria and a transient yellowish pigmentation of the skin and scleræ. The more severe reactions may lead to severe muscular pains, dyspnea and even death, while the milder grades have but a few hours of discomfort. These reactions occur between individuals with perfectly matched and grouped bloods and the secret evidently lies in the fact that such a complex and delicate physiologic product as blood is altered not only in its physical state but also in its biologic properties by the chemical treatment. Among users of the citrate method reports vary from 25 per cent to as high as 60 per cent of reactions. In a few instances

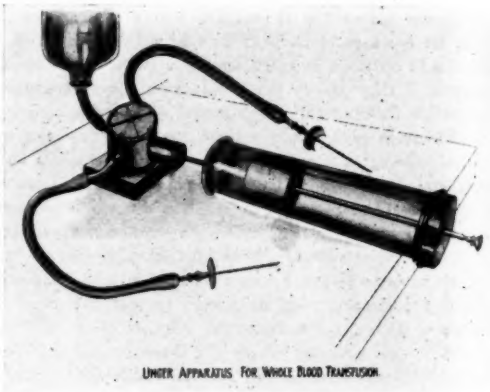


Fig. 2

such easily remedied accessories as new tubing and stale distilled water have been blamed for the reactions, but the fact remains that they are not eliminated when freshly distilled water and thoroughly seasoned tubing have been employed.

Unger[5] has undertaken by a rather elaborate series of experiments to compare the qualities of citrated blood and the blood of animals and persons who have been treated with citrate transfusion

with whole unaltered blood. He has made some very significant observations which should be carefully weighed in the choice of a method for transfusion. He finds:

1. The addition of sodium citrate to the blood causes an increased fragility of the red blood cells. This tends to make the results of the transfusion short lived and shortens the usefulness of the transfused cells as oxygen carrier. Where the tendency already exists as in pernicious anemia it cannot but be inferior to one of the methods employing unaltered blood.

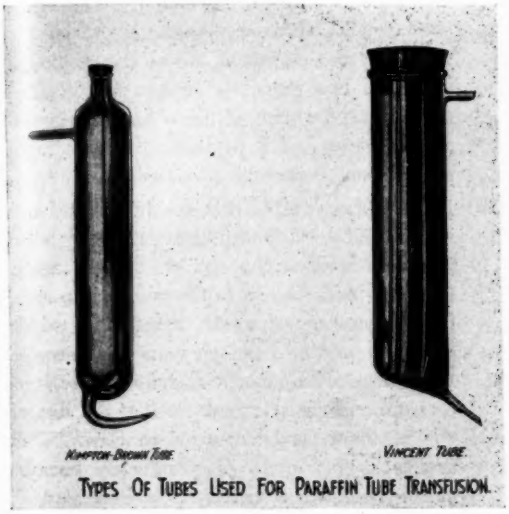


Fig. 3

2. It destroys the complement of the blood, as it also destroys the opsonins, thus rendering the method of inferior value where it is desired to combat sepsis or fortify the resistance of the individual to infection.
3. Phagocytosis is inhibited, which again reduces the value in the treatment of infection.

The work of Neuhof and Hirshfeld[6] shows that citrate transfusions may have some place in the treatment of hemorrhage. These workers found that the injection of sodium citrate alone, either intravenously or intramuscularly, into a patient resulted in a marked reduction in clotting time. This phenomenon is more noticeable as the amount injected increases up to the point of toxicity, where there is a reversal of the process and the blood becomes incoagulable. They found that a clotting time of ten minutes might be reduced to approximately two minutes by such measures. This procedure proved to be of value in all pathologic increases of the clotting time with the exception of those diseases characterized by a deficiency of blood platelets such as hemophilia and purpura. Good results were obtained in jaundice. With citrated blood a stage of toxification has been reached so that it does not clot. However, when it has been diluted by the entire mass of blood in the circulatory system the concentration is reduced to that point where the coagulation time is shortened.

To give an impartial verdict on the citrate method: It is easily and simply carried out, undoubtedly has value where transfusion is indicated, but has certain biologic after-effects which render it distinctly inferior to either of the whole-blood methods.

The methods employed in transfusion of unaltered blood rely upon rapidity and gentleness of manipulation with intermediate containers whose surfaces have been coated with non-irritating compounds to delay the inception of coagulation.

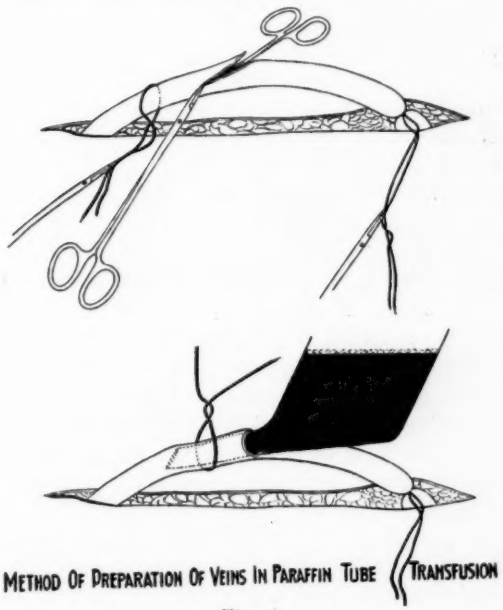
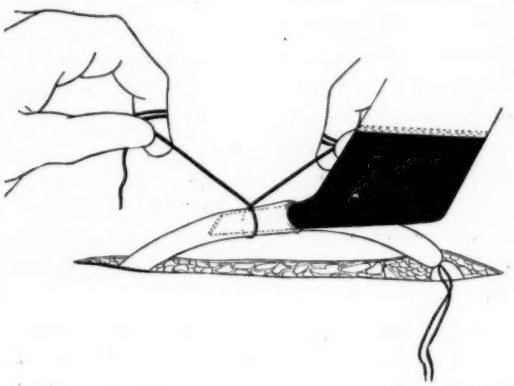


Fig. 4

The first of these is the so-called paraffin tube method which was brought out by Kimpton and Brown in 1913. They use a large glass container which has a small opening, closing with a cork at

the top, a side arm and a rather tortuous outlet at the lower end. This is coated on the inside with melted paraffin, which is allowed to cool, preventing mechanical irritation of the contained blood. The tube since devised by Vincent has a straighter, more easily cleaned outlet, and probably makes for greater efficiency. In carrying out a transfusion by this method, a few cubic centimeters of



METHOD OF TYING OUTLET POINT INTO VEIN TO PREVENT LEAKAGE

Fig. 5

novocaine solution are injected under the skin overlying one of the veins of the forearm and a short incision made. The vein is freed and two strands of suture material passed about it, one proximally and one distally. In the donor the vein is tied off proximally and in the recipient, distally. The other legature is not tied until the transfusion is completed, but the ends are grasped by a hemostat, which is left attached. Traction on this ligature serves to stop all outflow of blood. A three-cornered incision is made in the donor's vein and the outlet of the tube inserted, point directed distally. A blood-pressure cuff about the upper arm is inflated to 50 mm. of mercury and held at this point until the tube is filled. Filling proceeds rapidly and can be aided by rhythmic contraction and relaxation of the muscles of the donor's forearm. This simulates the action of a pump. When filling is completed, the sidearm is covered by the thumb of the hand holding the tube and it is carried to the recipient, whose vein is similarly prepared, an assistant meanwhile making traction on the untied ligature about the donor's vein to prevent bleeding. The outlet of the tube is inserted into the recipient's vein, point directed proximally. The blood can rapidly be pumped into the vein by means of a cautery bulb attached to the sidearm. As the last of the blood leaves the tube it must be rapidly withdrawn from the vein and the vein closed, otherwise serious air embolism might result. When 600 to 900 c.c. have been transferred, by the use of two or three tubes, the transfusion is complete and the veins may be ligated and the skin closed.

Objections to the paraffin tube method have been based on several grounds which may be worthy of discussion:

1. Certain writers have objected to the fact that a skin incision is necessary as smacking too much of a surgical operation. The small skin incision necessary is scarcely to be dignified by that name and where the method is employed as a preoperative and postoperative measure at the time of more formidable surgical measures, it is probably the most rapid and efficient means of transfusion.
2. It has been objected that the ligature of one of the veins of the forearm is wrong when other methods might obviate that necessity. Again a small matter, in the author's opinion, for the average surgical transfusion, which seldom occurs to a person more than once in a lifetime. The superficial veins of the forearm are sufficiently numerous that the loss of one of them need cause no concern. With medical cases such as pernicious anemia, where repeated transfusions are needed, it is a different matter and will be mentioned later.
3. It has been claimed that proper paraffin coating of the tubes is extremely difficult. In the author's experience it is quite simple to secure a complete and smooth coating if both tube and paraffin are well heated. The one point where the greatest care is necessary is to prevent collection and cooling of small droplets in the outlet or sidearm, as either necessitates that the tube be recoated.

The last method to be described is that of Unger, who has devised a mechanical contrivance for securing the desired result. This consists of a small round box-like affair with four outlets to each of which is attached a piece of rubber tubing. Two of these on opposite sides have needles entering the vein of the donor and the recipient, the

third is connected to a 50 c.c. syringe, which is well lubricated with paraffin oil, and the fourth is attached to a graduated funnel of saline. The cover fills the box, is grooved on opposite sides and rotates through ninety degrees. When the transfusion is started the cover is turned to the point where the syringe can be filled from the donor's vein while saline runs slowly into the recipient, keeping the needle and tubing free from blood, so that no clotting may obstruct the lumen. When the syringe is filled the cover is rotated to the point where the blood can be forced out, this time into the recipient, while the saline flows into the donor and keeps the needle and the tubing clean. When the syringe is empty the cover is reversed and more blood drawn. This procedure is repeated a sufficient number of times to transfer the desired quantity of blood.

The Unger method is a highly practical means of transfusion and gives excellent results where repeated transfusions are necessary, as the same vein may be used time and again. The weak points of the method are several and should be mentioned. First, the method is slower than the paraffin tube method and where speed is a factor in single transfusions it must be discarded. Second, there is a greater risk of clot formation in the relatively intricate mechanism than in either of the other methods. Third, the successful completion of a transfusion requires that two needles be kept in two separate veins and in working condition at the same time, sometimes a difficult matter with a single needle and vein where the patient is apprehensive and restless, or where the veins are small and difficult to find.

As contrasted with the citrate method, the whole blood methods offer certain quite definite advantages insofar as the results obtained are concerned. Post-transfusional reactions have been mentioned as one of the serious drawbacks of the citrate method, while following either of the whole blood methods they are a rarity. In an experience of some 250 paraffin tube transfusions and perhaps twenty by the Unger method, the author does not recall a single instance of transfusion between patients with compatible bloods where any after-effect which could be dignified by the name of reaction has been noted. Rarely, if ever, does the temperature rise above 100 degrees as a result. All writers report a low percentage of reactions, some less than one per cent.

This must not be taken to mean that the after-effects will be negligible if a donor of the wrong group is used, for under such circumstances the response will be swift and unmistakable. In the few instances which it has been the author's ill-fortune to witness, the patient has been trembling, dyspneic and complaining of precordial pain by the time 150 c.c. of blood had been received. If the transfusion is immediately stopped on the appearance of such symptoms no greater harm results than an unsuccessful transfusion and a case of hemolytic jaundice, but if the warning is disregarded death may result.

When sepsis is the indication to be met, the method employed should be one of those employing the unmodified blood, as by this means immune bodies may be transferred intact and unaltered by the paralyzing effect of the sodium citrate. Similarly in the anemias, particularly of the primary variety, the use of sodium citrate increases the fragility and shortens the lives of the already too friable red cells and it should be discarded for a method with fewer drawbacks. In the acute anemia of hemorrhage, where a shortening of the clotting time is desired, the use of citrate transfusion seems most justifiable, but objections may be offered to its use in even this limited field, since striking results follow the giving of whole blood.

Recent studies have demonstrated that infants may be transfused by the injection of blood into the peritoneal cavity, whence it is absorbed into the circulatory system, but the author must plead lack of experience in this procedure and omit it from discussion.

CONCLUSIONS

1. The sodium citrate method carries with it heavy liabilities and should be discarded insofar as possible.

2. Transfusion as an aid to surgical measures where more than one transfusion is rarely necessary can best be done by the paraffin tube method.

3. In conditions requiring repeated transfusions, namely, the anemias and other medical conditions, the Unger method is preferable to all others.

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"The type of practice of a decade ago permitted much symptomatic treatment. Diseases were allowed to run their course. The doctor was in a way the protector and nurse and comforter of the patient. The marked advances made in preventive medicine make it inevitable that the medical student of today and tomorrow must study the normal more than the abnormal and that he must be familiar with the incipient stages of all disease processes and recognize the first perversions from normal physiology and the first signs of abnormal pathology. The old easy practice of medicine has gone never to return. Great skill in the recognition of the early stages of disease means pre-eminence in medicine in the future. It is unfortunate that these periods of the beginning of disease are most susceptible to quackery and to deceit. We are all familiar with the phrase "threatened with pneumonia" or "threatened with disease." It is also inevitable that the very fact that we are able to relieve patients in the early stages of their diseases will in a way interfere with their interpretation of our success.

"The man who has an early operation for appendicitis often has such an easy time following his operation and during his convalescence that he sometimes wonders whether the operation was necessary. There is still great respect for the doctor who lets the patient go so far that he is only able to save him by the most energetic and persistent attention. This need not interfere with sound medicine and an increase in the respect on the part of the public for medicine. There is a gradually rising level of intelligence among our people and more and more of them are getting some biological understanding of life."—Extract from address by Dr. Ray Lyman Wilbur, President-elect of the A. M. A., at annual meeting of the California State Medical Society, May 16, 1922.

POST-OPERATIVE MANAGEMENT FOLLOWING GASTRIC OPERATIONS*

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Until recent years operations upon the stomach for ulcer of the stomach and duodenum and for gastric carcinoma have not received the attention they merit from the standpoint of postoperative treatment. The early recognition of the different types of complications and the institution of prompt and efficient treatment may mean not only the saving of a life, but may have a very definite bearing upon the success of the operation from the standpoint of a cure. In normal post-operative reactions the proper dietary treatment may prevent serious post-operative complications and is also a very important factor, from the standpoint of the ultimate success of the operation, in procuring permanent relief of the condition.

Operations upon the stomach naturally fall into two divisions from the standpoint of post-operative complications.

1. Gastro-enterostomies for duodenal or gastric ulcer where no further surgery on the stomach is done. Knife excision of duodenal ulcer with minor type of pyloroplasty such as a Mikulicz.

2. Gastric resections including Billroth No. I, Billroth No. II, anterior Polya, posterior Polya, and sleeve resection as well as Finney type pyloroplasties and gastro-enterostomies where a knife or cautery excision of a gastric ulcer is performed.

Complications following the first group, which comprises chiefly gastro-enterostomies, may be divided roughly into early and late complications.

Among the early complications hemorrhage[6] is probably the most important. Evidence[2] of hemorrhage may be seen at any time within the first forty-eight hours. The vomiting of bright red blood in any appreciable amounts should be considered very seriously. Vomiting of small amounts within a few hours of the operation does not mean much as it is usually due to residual blood left in the stomach following the operation or to a very slow oozing along the suture line. Clotting usual-

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ly takes place within a short time in these cases. The onset of a real hemorrhage is usually the result of suddenly increased arterial or venous pressure due to straining from vomiting or coughing. In these cases the stomach is unable to empty through the pylorus and gastro-enterostomy opening as fast as it fills with blood, with the result that a reflex vomiting is set up. Vomiting attacks may occur regularly from a few minutes to an hour apart. The blood is usually bright red and may be accompanied by large clots. Morphine hypodermically in doses large enough to produce absolute quiet is indicated. Ice bags should be put to the epigastrium. Repeated gastric lavage with water at a temperature of 120 F. will usually control the bleeding. This may be performed as early as twelve hours post-operative without danger. In case the bleeding has been extensive enough to materially reduce the blood volume, hypodermoclysis of normal saline, intravenous saline injections, and blood transfusions are indicated. The use of the various intravenous medications for the purpose of decreasing the coagulation time of the blood and promoting clot formation may be useful and should be tried along with other methods.

Profound operative and post-operative surgical shock following operations upon the stomach is of infrequent occurrence in the hands of experienced surgeons. It is usually due to prolonged operation with marked surgical trauma and is more frequent in its occurrence in the debilitated and dehydrated type of case seen so often with gastric carcinoma. Its occurrence following simple gastro-enterostomy is very rare. In cases with marked obstruction at the outlet due to contracture from scar tissue formation and its resultant dehydration and debilitation the incidence may be more frequent. However, it must be remembered that post-operative surgical shock and other complications can be practically eliminated by proper pre-operative measures in preparing the patient. When surgical shock occurs it is usually present directly after operation. It may be mild and transient or it may present more marked and serious symptoms. The symptoms are identical with surgical shock seen in other conditions. The patient presents the typical picture of a rapid, feeble pulse, slow, shallow respirations, marked perspiration, and a cold clammy feeling of the skin which is of a dead, whitish color. The milder cases usually respond very readily to the ordinary measures, such as elevation of the foot of the bed, external heat to the body in the form of numerous hot water bags, and the administration of a shock enema containing black coffee and whiskey. If the patient does not respond to this treatment within an hour the condition should be considered more serious. Transfusion, and intravenous and subcutaneous saline are indicated if there has been any appreciable bleeding. An immediate transfusion of 500 c.c. of blood will often be found to tide a patient over this very critical point, when all other measures may fail. This is indicated whether or not there has been any extensive loss of blood. Caffeine hypodermically as a stimulant is also useful.

Brown[4] advocates feeding the patient peptonized milk while on the operating table as a preventative of surgical shock. He inserts a soft rubber catheter into the stomach just before it is entirely closed, passes it down into the lower jejunum; introduces the peptonized milk; withdraws the catheter and completes the operation.

Dilatation[7] of the stomach occurs occasionally following gastric operations. Of ninety-two post-operative cases reported by Borchgrevinck,[8] six occurred after stomach operations, while thirty followed operations on the female genital organs. The most common time of onset is within the first forty-eight hours post-operative. Reardan[11] reports two cases of dilatation during the time of operation and emphasizes this phase of the subject.

There have been many theories[9] as to the cause of this condition of which two are the most important. First, the theory of duodenal occlusion produced by the upper border of the mesentery with its contained superior mesenteric vessels. Second, that of a paralysis of the muscular wall of the stomach, possibly due to swelling and edema around the site of the operation. This results in temporary obstruction to the extent that anti-peristalsis is not sufficient to cause it to empty itself. The latter theory at the present time is the most commonly accepted explanation of acute post-operative gastric dilatation. Because the patient is not getting fluids in any form by mouth is not sufficient reason for neglecting to consider the possibility of dilated stomach as the cause of the trouble if the patient is not doing well. Oozing around the site of the operation and the normal secretion of the mucous membrane is sufficient to cause this condition if the stomach is not emptying itself properly.

Vomiting is usually a prominent symptom, and is an overflow, regurgitant type, large quantities of bile stained material being expelled. Pain varies from a mild discomfort to severe epigastric distress. If the condition exists for any period of time, the patient will often show signs of collapse, with a rapid thready pulse, the skin cold and moist and respirations rapid and shallow. Due to the loss of large amounts of fluid by vomiting, there is an extreme thirst and a scanty excretion of urine. Examination of the abdomen with the dressing off will usually reveal the trouble. Dullness over the stomach area with distention especially of the left abdomen should be sufficient reason for the use of the stomach tube. The above symptoms, with the escape of a large quantity of fluid and gas, and the relief of the distention on passage of the stomach tube, will establish the diagnosis.

The treatment consists first, of early and efficient gastric lavage, and second of postural treatment. Lavage should be performed on the first suggestion of any of the above symptoms, and repeated every six hours or frequently enough to keep the stomach empty. The statement attributed to a famous surgeon, that a young man entering the practice of surgery should discard his stethoscope and replace it with a stomach tube about his neck, while not to be taken literally, nevertheless serves to emphasize its importance in general surgery. The value of its proper use is even more marked as applied to gastric surgery. Oschner[10] now has a standing order for his patients that "the moment a patient vomits or is nauseated or complains of gas pressure, gastric lavage with water at a temperature of 105 F. is performed immediately." In a considerable experience in gastric surgery the authors have never seen harmful results from the use of the stomach tube. Schwartz[12] reports one case of perforation of a chronic gastric ulcer caused by trauma from a stomach tube, but such cases are so rare that they can be disregarded when we consider the great benefit derived from the proper use of this simple instrument.

Secondly, if possible the patient should be placed in the knee-chest position, with the hips elevated higher than the head. Theoretically this will relieve the pressure from the intestines and mesentery on the duodenum.

No operative treatment for gastric dilatation has been found to be successful.

Some form of gastric obstruction is probably the most frequent and important complication of gastric surgery. It may be temporary or permanent, mechanical or inflammatory, partial or complete.

The causes are incorrect diet, inflammatory swelling and edema around the stoma, mechanical twists or kinks in the loops, too small an opening, constriction due to scar tissue, misplacement of a gastro-enterostomy, peritonitic ileus and anterior gastro-enterostomy. It should be understood that the latter is only done in cases of carcinoma, with complete or almost complete obstruction, as a purely palliative measure, where it is impossible to do a posterior gastro-enterostomy. The importance of a proper dietary regime as a prophylactic measure against obstruction cannot be too strongly emphasized. This will be discussed in more detail later.

The first symptoms of obstruction may be noticed any time after the first twenty-four hours. The most frequent time of onset, however, is from the seventh to the twelfth day post-operative. The patient frequently will not complain, but on close questioning will admit that he does not feel as well as on the previous day, or "that he has a full feeling" after eating. Very often hiccough will be the first symptom of gastric retention. We have never seen a patient with hiccough after a gastric operation fail to reveal retention.

If these milder and apparently insignificant signs are not noted or regarded as sufficient evidence for the use of the stomach tube, the unmistakable sign of vomiting will soon ensue, and unless prompt and efficient treatment is instituted, the patient will lose ground rapidly.

The treatment should be directed along two lines, dietary and lavage. First, gastric lavage should be done at least twice a day. If this does not keep the stomach empty, or there is retention of over 500 c.c., it should be performed every six hours. Secondly, everything should be taken away by mouth for twenty-four hours, and a fluid intake of 2,000 to 3,000 c.c. a day maintained by proctoclysis of tap water, or 2 per cent soda bicarbonate and 5 per cent glucose solutions. If proctoclysis is not retained, normal saline may be given by hypodermoclysis. After twenty-four hours of starvation, fluids may be started, using tepid water, one ounce an hour by mouth for twelve hours. If retained well, small amounts of tea, broth, and gruel may be added gradually increasing until a regular post-operative retention diet is retained. During this

period it is very important to keep a careful record of the amount of fluid which is getting past the obstructed point in the bowel. The amount of material vomited and the amount withdrawn by stomach tube should be measured and substracted from the total fluid intake. The difference should be supplemented by sufficient fluids per rectum or subcutaneously to bring the fluids up to the required amount. The retention diet should be entirely liquid with a high percentage of absorbable foods of a high caloric value, and should be given in small amounts at frequent intervals. The following is an example of the type of diet which may be used in these cases:

6 A. M.	1 glass hot milk (one-half cream).
8 A. M.	Cereal gruel (made with milk) sugar.
10 A. M.	1 glass malted milk (one-half cream).
12 noon	6 oz. cream soup (one-half cream and one-half milk used). Cocoa or Kaffee hag—cream—sugar; soft custard or jello with whipped cream; sherbet.
2 P. M.	1 glass buttermilk.
4 P. M.	Egg-nog (one-half cream).
6 P. M.	Cereal gruel—sugar, cocoa or Kaffee hag—cream and sugar, ice cream.
8 P. M.	1 glass hot milk (one-half cream).

This will total approximately 2,796 calories, when cocoa is served for one meal and Kaffee hag for two.

Dixon[5] has recently shown that these cases of upper intestinal obstruction have not only characteristic clinical signs, but also constant chemical changes in the blood. These consist of a lowering of the plasma chlorides and increase of the blood urea and carbon dioxide combining power of the blood. The administration of sodium chloride subcutaneously, intravenously or by proctoclysis brings the blood findings to normal, reduces the associated toxemia and lowers the risk of a secondary operation.

A great majority of obstructive cases will be relieved by the above regime if it is persisted in. This type is usually due to an inflammatory thickening of the stoma, or to too rapid an increase in the diet, putting large quantities of food in a stomach whose inervation and normal peristalsis have been interfered with, and whose emptying power as a result is temporarily disabled.

A few cases do not respond to lavage and dietary restrictions, and these present a most serious problem. Whether to perform a secondary operation, and if so, when, and how much to do are questions of vital importance. At this stage, a patient has been partially or totally obstructed from five to fourteen days or more. He has lost weight and strength; he is undernourished and dehydrated. The blood chlorides are low, and the carbon dioxide high. Here no general rules obtain. Each patient is a law unto himself according to the judgment and experience of the individual surgeon. One statement, however, will apply to all cases; namely, do not do too much surgery. More than one patient has lost his life because of too much surgery at this critical period.

If the condition of the patient will warrant it, the abdomen may be opened under local anesthesia, and the site of the previous operation examined for the cause of the obstruction. As previously stated this may be found to be due to too small a stoma, malposition of a gastro-enterostomy; constriction of the opening due to edema or scar tissue; mechanical twists or kinks in the proximal or distal loop, or too long a proximal loop. The relief of these conditions will again depend upon the ingenuity of the surgeon. In many mal-functioning gastro-enterostomies, a simple entero-anastomosis between the proximal and distal loop will relieve the symptoms; or an attempt may be made to enlarge the stoma. In a few cases[1] the gastro-enterostomy will have to be taken down and some form of gastro-duodenostomy performed.

The condition of many of these obstructive cases, however, will not warrant the trauma and shock incident to exploring the site of the previous operation. They are starved and dehydrated. In such a case, a jejunostomy of the C. H. Mayo type done under local anesthesia and without exploring is indeed a life saving procedure. Twelve hours after such an operation, small amounts of liquid nourishment (one ounce an hour) may be given through the enterostomy tube, this may be gradually increased until the patient is in condition to stand more extensive operative procedures, or until the obstruction is relieved.

Post-operative gastric tetany does not occur frequently. Its occurrence is always associated with gastric obstruction as described above, and is definitely dependent upon the duration and degree of obstruction. If obstructive symptoms are present, recognized early, and properly treated gastric tetany will not occur. However, in some cases the symptoms will not be sufficient to cause apprehension and the danger signals disregarded until the tetany develops. The symptoms are characteristic,

the attacks usually being preceded by drowsiness. The pulse is weak and the respirations shallow. Convulsions occur in the majority of cases and are characterized by clonic muscular contractions. They are usually followed by a comatose or semi-comatose condition. The position d'accouchiere of the hands with the thumbs slightly turned in is practically always found. The blood findings of low plasma chlorides and high carbon dioxide combining power will verify the diagnosis. Treatment consists in first relieving the attack. This may be done best by the simple administration of sodium chloride in sufficient quantities to bring the blood chlorides to normal. It may be given either subcutaneously, intravenously or by rectum or by some combination of the three. This treatment will afford complete and almost immediate relief. Further therapy should then be directed against the obstruction as described above, always bearing in mind the necessity of keeping the chlorides as near normal as possible to prevent recurrence of the tetany.

Peritonitis following gastric operations may be divided into two groups from the causative standpoint:

1. Peritonitis with no apparent contamination at operation and no evidence of leakage or perforation of the suture line.

2. Peritonitis due to leakage of the suture line. In most cases it is difficult to differentiate between the two. However, a patient who has had a normal convalescence, that suddenly develops a sharp piercing pain in the epigastrium with symptoms of shock can be definitely classed as due to sudden leakage through the line of suture.

The authors have seen two cases, in which a Murphy button entero-anastomosis between the two loops of a gastro-enterostomy was performed, develop a sudden pain in the lower abdomen and go into shock. Autopsy revealed a "blowing out" of the Murphy button anastomosis with general peritonitis. These occurred on the ninth and tenth days post-operative following an apparently normal convalescence.

If the onset of the symptoms is gradual and within a few days after operation it may or may not be due to leakage. If the symptoms are definite enough to make the diagnosis of perforation of the suture line fairly sure, operative interference is the treatment of choice. If operation is not resorted to, medical treatment with heavy doses of morphine, ice bags to abdomen in the early stages, nothing by mouth and hypodermoclysis seems to produce as good or better results than any other treatment. At best the mortality will naturally be very high in these cases.

Even more important than the treatment of complications is the treatment of the much larger group of uncomplicated cases. This treatment should be directed toward keeping the fluid intake at a normal level and proper dietary measures. Strict adherence[8] to a definite conservative post-operative regime will cause a much greater percentage of cases to be classed as uneventful convalescents. In the first group nothing should be given by mouth the first forty-eight hours. Proctoclysis of tap water, glucose and sodium bicarbonate, or normal saline. Hypodermoclysis may be used if proctoclysis is not well tolerated. The fluid intake should be maintained at approximately 2,000 to 2,500 c.c. per twenty-four hours. If the patient is doing well the third day he may be started on one ounce of water by mouth every hour. This should be supplemented by proctoclysis or hypodermoclysis to attain the required fluid intake. The fourth day very weak, bland, and nourishing liquids such as broth, albumen water, and tea may be substituted for the water. The fluid intake by mouth may be increased to two ounces every hour. The fifth day post-operative it is usually possible and advisable to start the patient on very soft food such as junket, oatmeal or barley jelly. This should be limited to two ounces at a feeding. If the patient is not disturbed by this and desires it, it may be given every three hours. The sixth day junket, oatmeal or barley jelly with parboiled milk containing sodium citrate may be used alternately every two to three hours. Two to four ounces at a feeding may be used if well borne; water, broth or tea in small amounts may be taken between feedings. If there is any distress from the feedings they should be discontinued and the regime of the third or fourth day used. The seventh and eighth days should be continued as the sixth, feeding every two to three hours, alternating junket with rich milk containing 15 grams of sodium bicarbonate or 1.5 ounces of lime water. Simple custard lightly cooked, oatmeal jelly, blanc mange or a fresh soft boiled egg may be used. The feedings should be about three hours apart, the quantity of food each feeding may be four to five ounces. It is important that the patient should not be disturbed

while resting. Rather forego one feeding than that the patient be aroused for this purpose.

The diet after the first week may be considerably increased but should still be very bland and non-irritating and given in relatively small, freqnent feedings.

Breakfast

Four to six ounces of well cooked cream of wheat, strained oatmeal or farina, one egg, soft boiled or poached. One piece of stale bread toast or zweibach, one cup of hot water and cream.

10 A. M.

Two-thirds of a glass of rich milk with one ounce of lime water or 15 grains of sodium bicarbonate.

Lunch

Serving of cream soup, pea, bean or asparagus or puree of potato; choice of chicken or meat jelly without the meat. Small amount of baked or mashed potatoes. Sweet apple sauce or apple butter served warm. Bread and butter. Hot water and cream.

4 P. M.

Two-thirds of glass of rich milk with one ounce of lime water.

Dinner

The same as at lunch excepting no soup. Substitutes or additions such as custards, gelatine, jello and simple pudding may be made. Hot water and cream flavored with tea.

8:30 P. M.

Milk toast or hot milk with soda or lime water.

It is very important to give no meat of any kind until after the tenth day and in most cases it is best to give very little for a period of three months. A case which is otherwise doing very well may be upset and obstructive vomiting started by the use of meat. This general outline will serve very well in the majority of cases. However, each case is somewhat of a problem in itself and should be handled as such. At the slightest indication that the diet is not being well tolerated it should be stopped immediately. In some cases it may be necessary to discontinue everything by mouth for a day or two and then return to the beginning of the diet schedule and gradually work up again. Others may be simply put back a few days in the diet schedule.

Complications following the second group are similar in most respects to complications following the gastro-enterostomy group. It will be remembered that the second group includes gastric resections, Finney type pyloroplasties and gastro-enterostomies where a knife or cautery excision of a gastric ulcer is performed. The reactions following this group, as would be expected, are usually more severe, the convalescence is more protracted and the mortality definitely increased. It is unnecessary to consider the symptoms and treatment of the various complications as this has been covered in a consideration of the first group. However, a few points of divergence are worthy of mention. Hemorrhage occurs most frequently following this group. This can be accounted for by the much larger scope of the operation with the ligation of the blood supply over a larger area. Surgical shock occurs more frequently for the same reason and because of the additional time necessary for the operation. Dilated stomach occurs less frequently in resections of the stomach. If the anastomosis is large enough and made on the dependent portion of the stomach it is practically negligible. In Finney type pyloroplasties its occurrence is more frequent though not to any marked degree. However, the convalescence following this operation is as a rule definitely protracted and long drawn out. There may be no definite post-operative complication but just a tendency not to improve as fast as following most gastric operations. This can be accounted for by the fact that the pylorus which has been enlarged is still not as large as an ordinary gastro-enterostomy. The size is materially reduced the first few days after operation by the swelling and edema practically always present until normal circulation has been re-established and healing well started. This constitutes a partial obstruction which may give signs and symptoms of obstruction, retention and tetany if not apprehended. Complete obstruction and tetany following gastric resection is very rare, one case was seen with a fatal termination. This case was an anterior polya. The patient became very ill with obstructive symptoms and died within a few hours before tetanic symptoms developed. Post mortem examination revealed intense edema of the anastomosis with gangrene of a small portion of the anterior wall of the stomach due to insufficient blood supply. Temporary partial obstruction is seen fairly frequently following gastric resections, but is practically always relieved by the prompt use of the stomach tube and dietary restrictions as previously described. Peritonitis and perforation of the suture line has a somewhat higher incidence in this group. The symptoms and treatment of these conditions may be considered essentially the same as in the gastro-enterostomy group. The possibility of a fatal outcome if complications do occur, however, is definitely increased because of the greater severity of the operation,

and greater duration of the anesthetic with consequent increased lowering of the patient's resistance.

The routine regime as established and followed in all cases in the post-operative treatment of this group consists mainly in strict adherence to a definitely restricted diet. Here again the importance of carefully following such an outline cannot be emphasized too strongly. In any considerable group of cases there will be exceptions to the general rule, however. In these cases, where the diet is not well tolerated, it should be restricted even more, occasionally to the point of giving nothing by mouth for several days. Individual judgment combined with the findings of the stomach tube are the most important factors in determining what the stomach will tolerate.

The patient should have nothing by mouth the first seventy-two hours following this group of operations. Fluid intake of 2,000 to 2,500 c.c. each day is maintained as described above. The fourth day one ounce of tepid water may be given every hour unless contra-indicated. The fifth day two ounces every hour of broth, weak tea, albumen water or grape juice may be substituted for the water. Soft food may be started on the sixth day if the patient's convalescence has been normal this far. Two ounces of junket, oatmeal jelly, buttermilk, barley water or lime water may be given every two hours. One or two feedings may be given at night if the patient awakens. The seventh day blanc mange, custard or gelatine may be added. The amount should still be limited to two ounces every hour. Two ounces of water or tea may be given on the alternate hour.

Starting on the eighth day small meals may be given. The diet from this point is essentially the same as in the first group with the difference that the whole regime is one day later.

No meat should be given until after the twelfth day post-operative. The patient should be advised to eat slowly and masticate thoroughly. Sugar and pepper should be avoided and very little salt should be used. An hour's rest lying down after each meal is advisable. Cleanliness of the teeth and a daily bowel movement should be observed.

This takes the average patient to the point where he is discharged from the hospital. Here trouble may begin if he is not cautioned especially in regard to further restriction and care in his diet. He feels good and his natural tendency is to over eat and enjoy a good meal as a change from the hospital diet. A very safe rule to follow is to tell him to eat about the same things he was getting at the hospital at the time of his discharge and to eat them in small amounts.

When the patient is ready to be discharged from the surgeon's care it is necessary to give him definite instructions regarding what and how much he can eat. It should be explained, according to the type of operation he has had done, that his diet in general should be selected from foods that do not cause mechanical, chemical, or thermal irritation of the stomach or that his meals must be small and frequent in order to give a stomach which has been greatly reduced in size a chance to compensate.

A glass of fresh or boiled milk to which a tablespoonful of lime water has been added at 10 A. M., 4 P. M. and bedtime is advisable. After the third month it is usually possible for the patient to gradually increase his diet up to normal. If at any time he encounters trouble he should return immediately to the smaller meals at frequent intervals. Milk taken with half cream throughout the convalescent period is good practice and an excellent weight builder. Caution as to general hygiene, such as care of the mouth, daily bowel movements, daily exercise and rest after meals is advisable.

SUMMARY

Immediate recognition and treatment of post-operative complications is essential and definitely shortens the convalescent period. A post-operative regime of a restricted diet greatly lessens the chance for complications and shortens the period between the time of the operation and the time the patient considers himself completely well.

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The science and art of medicine have reached a degree of perfection so that what we need today even more than further scientific discoveries is to educate the lay public as to what medical men are actually doing for the welfare of the whole, in order that there may be better understanding and closer co-operation between the public and the medical profession. This information cannot be conveyed to the laity and this co-operation cannot be secured until the rank and file of the medical profession themselves are better informed along lines of medical economics. And we must first of all look to the medical editors of America to convey this information to the practitioners of medicine in order that they may then pass it on to the public. This gives the medical editors a wonderful opportunity to which I feel sure they will rise when they once see the importance of it. The thing to do is not to give less attention to the scientific fundamentals but to cut out many of the frills and foibles in diagnosis and treatment with which medical journals are now cluttered up. If we would pay less attention to the newer refinements in diagnosis, which often confuse rather than clarify, and to new operations which only too often complicate rather than simplify, both of which are usually discarded after a short time, and both of which I am sorry to say are only too often brought out for no better purpose than to advertise an individual physician or a group of physicians, and in place thereof devote this time to a serious study and the space thus saved to an adequate representation of problems in medical economics, we would, I believe, have smoother sailing and accomplish more good as a profession.—*E. H. Ochsner, M.D., Am. Med., XIX, 40, 1924.*

PRE-OPERATIVE AND POST-OPERATIVE CARE OF SURGICAL PATIENTS*

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The care of surgical patients is interesting from several standpoints, but we wish to bring before you a few of the more interesting points of practical importance in the care of surgical patients before and after operation, not touching upon the actual operation or anesthesia of the patient.

Time of Entry Into Hospital.—Whenever possible, the patient should be in the hospital the night before operation, and in the more serious cases forty-eight hours is not too long. At this time the records can be completed, the physical examination and laboratory tests made, the diet regulated, fluids and alkalies administered, if indicated, the field of operation prepared, and the patient will become acclimated to his surroundings.

Mental State.—It is well known that fear has a great influence on the physical condition of the patient, especially in relation to shock, and the psychic influence of the surgeon and hospital attendants is an important factor in preparing a patient for operation. When the patient has confidence in his surgeon, and the hospital attendants show that they know what they are about, without undue bluster, it imbues the patient with assurance, and goes a long way towards a comfortable convalescence. Visitors should be mostly excluded, because, as a rule, they think of the improper things to say to a patient. The patient should be kept quiet, so that he can sleep well and reach the operating table without fear.

Hospital Records.—It is important that an accurate history, written in descriptive phraseology, be recorded, and that a proper interpretation be made of this history. A thorough physical examination should be made and recorded, paying special attention to the heart, lungs, kidney function and blood pressure. Necessary laboratory tests should be made and recorded: while laboratory findings are not conclusive, yet when properly correlated to the physical findings, they are a valuable aid in modern diagnosis.

Special Preparation.—Throat and mouth should

*Read before the Southern Minnesota Medical Association, Mankato, May, 1924.

be examined, and the presence of an acute respiratory infection should be noted and treated, postponing operation until a satisfactory condition can be attained. A dirty mouth or an acute infection in the nose and throat often leads to serious post-operative conditions, especially when an anesthetic is given. Digitalis is a great help in supporting the heart and circulation, especially when a serious operation is undertaken, and where there is evidence of myocardial weakness and circulatory incompetence. Digitalis for two or three days before operation is often a great help in turning the tide towards a good recovery. It is much better than stimulation with strychnia or whiskey. Quick acting stimulants should be used only as a whip in an emergency, and never in the preparation of a patient.

Fluids.—It is usually wise to give plenty of fluids by mouth, and, if necessary, by rectal drip or intravenously. The addition of alkalies improves the general state of the body, especially when exhausting disease or starvation tends to a condition of acidosis. One can give fluids to within a short time of the operation with benefit.

Cathartics.—A much abused method of preparation consists in giving excessive cathartics. These produce congestion, sometimes acute enteritis, and often dehydration, and may cause post-operative vomiting, tympanites and so-called gas pains. Where a patient's bowels have been normal, no physic should be given. Under no circumstances should a cathartic be given within forty-eight hours of the operation. Much better technique consists in a careful and thorough colon flushing with normal salt solution, than any other method of bowel preparation.

Preparation of the Local Field of Operation.—A good routine, when there are no contraindications, is to give the patient a general bath or a sponge bath the day before, to carefully shave the field of operation without causing irritation, put on a clean binder and do nothing else until immediately before operation, when, depending upon the choice of the operator, benzene, followed by iodin and alcohol, or 5 per cent picric acid solution, or phenoco solution should be used, the object being to cleanse the superficial skin and not attempt a thorough skin sterilization. It is impossible to reach the bottom of the fat, sweat and hair follicles, and during an operation, these will empty on the skin, no matter what previous preparation has been undertaken. If the skin is irritated, there is a greater danger of infection than otherwise. After cleansing, and the use of one of the above mild applications, protection of the skin with sterile towels is sufficient and efficient. We desire cleanliness, not irritation. In females, a cleansing but not an antiseptic douche is best, and if vaginal work is to be done, then a cleansing with a mild lysol solution meets the indication. Iodin is sometimes used, but there is a great danger of subsequent irritation, and this should be avoided. To sum up the preparation of the field of operation, we must emphasize that if we are reasonably clean, use mild applications, and avoid irritation by proper skin protection with drapes, then we meet the indication, and do not predispose to subsequent infection.

Morphin with scopolamin or atropin is indicated in most cases, as it quiets the patient, facilitates the giving of a general anesthetic, and keeps the patient quiet after operation. Judgment must be used in this, depending upon the case, and the general make-up of the patient. It is sometimes wise to give the patient 8 or 10 grains of veronal the night before, to assure a good night's rest before operation.

Every surgical clinic should have at hand grouped blood donors, materials and equipment for giving intravenous saline or hypodermoclysis, and a supply of fresh adrenalin to be used when loss of blood or shock occurs.

Special Operations.—In certain fields or types of operation, special preparations are indicated, and it is in these cases that such wonderful progress has been made in modern surgery, and mortality as well as morbidity has been greatly reduced. First, it is wise for each tonsillectomy case to have a urinalysis, lung examination and blood coagulation test made beforehand, to ward off any alarming emergencies. Second, goiter; the proper selection of cases for operation, depending upon the type of goiter, the history of the case, the rate of metabolism and amount of degenerative changes locally as well as in the important organs of the body, has increased the operability and improved the operative mortality materially. Preliminary rest, the use of Lugol's solution, operation in several stages, from simple ligation to complete thyroidectomy, with or without immediate closure of the wound, must all in turn be used, depending upon the indication; and keen judgment and pa-

tience bring their own reward. Biliary infections require, above all, a knowledge of the coagulability of the blood, and, where this is slow, the preliminary intravenous injection of calcium chlorid solution, giving 5 c.c. of a 10 per cent solution daily for two or three days, as indicated, a treatment which Doctor Wolters has brought before the profession and emphasized with illustrious results; it has been a great saver in gallbladder operations. Diabetic cases in need of surgical care require a careful preliminary preparation, with the establishment of a proper sugar tolerance, with or without insulin. Where formerly a diabetic gangrene in the toe required an amputation above the knee, we now, with the patient in the proper condition, can often ablate the dead tissues without interfering with the local circulation, and find almost normal granulation and healing as our reward. Prostatectomy cases should have the proper kidney secretory balance established before operative procedure is undertaken. The bladder should be decompressed gradually, watching the blood pressure until it is stable, checking the excretory function, and noting the blood retention of creatinin and blood urea or non-protein-nitrogen; and with the two-stage operation we can promise definite results, where formerly it was a hazardous and doubtful undertaking. As mentioned before, in cases with myocardial or circulatory unbalance, the giving of digitalis for two or three days beforehand is of great help.

Record of Operation.—It is always wise to note carefully the pre-operative diagnosis as well as the post-operative diagnosis on the chart at the hospital, to note the findings, as well as all the operative steps undertaken; the type of incision and the kind and location of drains and sutures should be noted.

Post-operative Care.—Transportation of the patient from the operating room to the bed should be made so as not to disturb sutures and drains. A competent doctor or nurse should accompany the patient, and stay with the patient until he is out of all danger. The patient should be protected against exposure; the bed, properly prepared beforehand and warm, should be in such a position of head elevation or foot elevation as is indicated by the operation. Position of the bed and posture of the patient mean a lot in the prevention of adhesions, phlebitis, embolus, and in the treatment of shock. A rectal drip should be used, when indicated; but unless there is shock or a poor circulation, it is wise not to use it, since it tends to cause gas pains and nausea. We find a good method to be one in which the can containing the fluid is placed on a table, level with the rectum, and a short tube, just long enough to pass the sphincter, is inserted and left in situ. The rectum will absorb fluid according to the amount it can absorb, and the patient will expel gas through the can. For this an alum solution or normal salt solution serves well. The nurse, of course, should note the condition of the pulse, temperature and respiration, the facies and mentality of the patient, the amount of excretion, such as bile, urine, etc. If there is cardiac weakness, digitalis might be indicated. If there is dilatation of the stomach, gastric lavage and placing the patient in a prone position relieves the mesenteric pull on the duodenum, which is usually responsible. The giving of fluids may be started almost as soon as the patient desires them, hot water being best. It is easier to vomit with water in your stomach than with an empty stomach. The giving of food should be started as soon as conditions permit. Paralytic ileus without mechanical obstruction is best treated by gastric lavage, prone position of the patient, the introduction of a colon tube and, if necessary, a high and early enterostomy. Mechanical ileus requires a high enterostomy and secondary operation, before it is too late. The bladder should be watched, and if the patient cannot void spontaneously, and all routine attempts have been made, and the patient is in discomfort, there is no harm if catheterization is done *properly*, and a solution of argyrol, lunosol or other suitable antiseptic is immediately put into the bladder before withdrawing the catheter. After each operation the kidney function should be watched, which can be best stimulated by the introduction of fluids into the body.

Bowels.—The after care of the bowels is important. Do not give cathartics if you can help it. The use of a rectal tube, the above mentioned method of using a can on the level with the rectum, or a bowel irrigation meets the indication better.

Pulmonary Embolus is a tragic occurrence which we can never predict. In serious operations on the pelvic organs or rectum, it is important that the patient be kept quiet for twelve days, and that no large enema or cathartic be used. Elevating the foot of the bed to improve the return circulation from the lower extremities is important, espe-

cially when there has been infection in or near any of the important pelvic vessels.

Secondary collections of infectious fluids should be looked for and drained when they occur.

Dressings should be made with the "hands off" technique, with forceps. The wound should be inspected twenty-four or forty-eight hours after operation; the dressings should be changed at the proper time. In removing sutures, it is better to cut them one day and remove them in twenty-four or forty-eight hours. Because wounds are infected, one should not be careless in changing dressings, since you can get another type of infection which is worse than the first. This is especially important in traumatic injuries of the extremities, and we find that even in the presence of infection, if we treat the whole limb just as carefully as if we were preparing an abdomen for operation, and keep the whole limb protected with sterile drapes during the healing process, we get kindlier healing and better function.

We think it is a wise plan to give the patient a record of the operation—in other words, an inventory of his remaining as well as his missing organs, for obvious reasons; both for his own information, as well as for the use of any further medical attendants.

A follow-up record of each surgical case works for the benefit of the patient, as well as of science, and in such institutions where social service can be had, it is worth while.

GOOSE GREASE FOR HAPPINESS

Any young interne in a loud-smelling hospital will tell you that the all-wise "Doc" of our boyhood days was an animated reservoir of ignorance. Likewise, the trained nurse with the hazel eyes will assure you that the old ladies who used to group themselves around every sick bed were merely advance agents for the village undertaker.

Bread-and-milk hot-packs are not what they used to be. The bag of "assifidity" hung around the neck is not recognized by Johns Hopkins as a preventive of measles. Serum takes the place of goose grease.

Physicians revise all of their beliefs every forty years. If the long-whiskered practitioner of the eighties, who could cure anything with calomel and morphine, is derided by the specialists of today, may we not predict that the present crop of specialists will be laughed at by the super-specialists of 1950?

They tell us that all of the pallid heroines of history were not broken-hearted, as reported. You can't break a heart. It is a combination of outer casing and rawhide. All of the anemic maidens we have read about were suffering from a lack of vitamins. The balanced ration may take most of the romance out of the world. It is almost impossible to be in love and feel well at the same time.

A venerable lady who smoked a pipe told me, many years ago, that white walnut bark should be peeled from the tree in the dark of the moon. If peeled upward, it was a purge. If peeled downward, it was an emetic. She spoke with much conviction.

The pin-feathered medical student will say that the old lady was daft. How does he know? Has he ever tried out white walnut bark in a large number of cases, working in the dark of the moon, peeling first upward and then *vice versa?* He won't even admit that sassafras tea, taken in the spring, thins the blood which has become all thickened up with sausage and buckwheat cakes during a long winter. This, in spite of the fact that millions of people have actually diluted themselves with sassafras, and are ready to make affidavits.

We come now to the buckeye or petrified potato, carried in the trousers pocket as an antidote for rheumatism. No sense to it? Well, it's just as easy to explain the buckeye as it is to explain the radio.

If a large number of trustworthy citizens and God-fearing women testify that a woolen sock around the neck will drive away sore throat, that turpentine and sugar will cure a cold, that mutton tallow, gunpowder and a certain bittersweet bark cooked up together will dispel the itch, that catnip will relieve indigestion and skunk oil invariably banishes bronchial inflammation, while a flaxseed poultice will often do just as much good as a trip to the Mayos, how can we go against such a mass of evidence?

Out in the brush there is still an occasional old-fashioned mother who keeps the baby lubricated and calmed down by permitting it to work on a strip of bacon rind. This is contrary to all rules. The babyologists say that a young and toothless child requires orange juice. Yet thousands of bacon-rind babies have grown up to be congressmen, chiropractors, county agents, actresses and officers in the Federation of Women's Clubs.

Let Dr. Billings and the Harvard savants say what they will, when the children out our way begin to act squirmy, we will give them pumpkin-seed tea.—George Ade, The Cosmopolitan, September, 1924.

MINNESOTA MEDICINE

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EDITORIAL

The St. Cloud Meeting

This recent meeting, and notably certain expressions in the House of Delegates, indicates the firm conviction of a large number of members, that larger portions of future programs must be clinical in character. This is a logical stand and while an outgrowth in part of the splendid accomplishments of the now famous Tri-State gathering, is not entirely the result thereof. We have had the various Clinic Weeks with an ever larger number of small special society group meetings, in which stereotyped papers have long been "taboo." Nevertheless, these clinical meetings will not go unless they are held rigidly to some form, structure, and sequence; unless each clinician has some message which he can effectually mobilize and present. "Clinic Weeks" cannot for example gravitate into marathons from hospital to hotel or meeting place, with only a scattering attendance at many of the sessions. Any sort of a preacher needs someone in the pews; only a fanatic can be eloquent in a hollow cave.

This is no academic and immaterial problem when we survey what actually happens to our medical programs and the St. Cloud meeting is fresh enough in our minds to make certain reviews useful. Both sections had very fine programs and the joint sessions were noteworthy and timely. Yet the sessions of Thursday began with only a "baker's dozen" on the benches; the men who came arrived late and were not ready to attend the session until most of the papers had been given. The suggestion was passed out by some that the place of meeting was not sufficiently central; that the Twin Cities should be the logical and constant meeting place. The St. Cloud committee had made arrangements for the physical comfort and mental relaxation of those who attended that have never been surpassed by any city in Minnesota acting as our host. A paved road made it only two hours further than the Twin Cities for anyone residing near thereto, and it brought the meeting to those in the west and northwest a little closer than ever before. Much argument may be advanced in favor of a constant central meeting place, but it must never be forgotten that large attendance records in large centers can easily represent the registration of a definite percentage of local men who only grace the banquet or smoker by their presence, or direct the golf tournament.

Finally, the joint session of Thursday afternoon brought to Minnesota (distinctly through the efforts of Dr. Charles Hensel) the most noteworthy presentation of the whole meeting: Dr. Carl R. Moore, of the University of Chicago, came, with a most interesting review of his work on the testes and the function of the scrotum. The Steinach episode in medical research has brought a deal of unpleasant notoriety to our profession that can only reflect the subumbilical seat of the intelligence in a considerable segment of the body politic. In so far as our profession has lent itself to the exploitation of the ideas concerned, we indicate fully our own incorporation into that segment. Dr. Moore's orderly, instructive, dispassionate and convincing researches indicate clearly the facts involved and the general futility of Steinach's attempt at rejuvenation. Due to the fact that the *early and late* sessions of every program received scant courtesy and attendance, he had, with the other excellent men of the Friday afternoon program, a very small audience.

New Year's is our usual time for sublimity and

resolutions. Let us anticipate that event somewhat while certain matters are fresh in our minds: Let us here and now resolve that whenever and wherever we attend medical meetings, we will make early hotel and banquet reservations, and we will come early and stay late.

E. L. T.

Scarlet Fever

At a time when doubt has been expressed as to the specificity of the streptococcus in disease, it is extremely interesting to find that so familiar a disease as scarlet fever may be definitely attributed to a specific streptococcus. Dochez, Tunnicliff, and others had shown that the streptococcus, which could be isolated in practically 100 per cent of the cases of scarlet fever during the week of onset, gave specific immunologic reactions. It remained for Dick and Dick to show that the disease can be experimentally produced by the application of a particular streptococcus to the throat of susceptible adults. In their investigations they were able to rule out the possibility of an ultra-microscopic virus and to show that it was definitely the streptococcus that was the etiologic factor. Their results are further of interest in showing that the cultural characteristics of the organism were not identical in the 100 cases studied, 84 per cent of the organisms fermenting manite and 16 per cent not doing so. The fact that they were able to produce scarlet fever with an organism of each type indicates that the cultural characteristics need not be the same, although the identical clinical picture is produced.

Dick and Dick have fulfilled all four of the canons of Koch in their demonstration of the streptococcus as the etiologic factor in scarlet fever. In their later work they were greatly helped by their skin test for susceptibility to scarlet fever. This is comparable to the Schick test in diphtheria. The filtrate of the streptococcus is injected intracutaneously and the result read after twenty-four hours. By means of this test susceptibility to scarlet fever can be determined. By repeated injection of the same antigen, they were able to immunize patients against scarlet fever.

Dick and Dick, as well as Dochez and his coworkers, have produced a scarlet fever antitoxin. The results to date seem to show that this antitoxin is useful in the acute toxemia of scarlet fever similar to the toxemia of diphtheria. If it is to be used, it must be given in the first days of the illness. Progress has been made both in the treatment of the acute stage of scarlet fever and in the prevention of the disease itself.

H. F. H.

Dr. Archibald MacLaren

The passing away of Dr. MacLaren leaves a gap in our ranks which it will be difficult to fill. His absence at our state meeting in St. Cloud due to his illness was sorely felt but his departure so soon after the convention came as a shock to most of his friends and acquaintances.

The presidency of our state organization is an indication of the esteem felt for Dr. MacLaren by his fellow members. The position he held in the medical profession of the state was truly enviable. He was one of the outstanding figures in surgery of the Northwest, a position he not only held because of his long professional experience, industry and natural ability but because of his unusually fine character. Perhaps the outstanding quality was his absolute honesty in all his dealings. His friends at times feared his openness would work to his detriment. It never did.

While we have lost a friend, those who knew him will always retain the inspiration of his life.

Dr. Frederick Lee Beckley

As a sad coincidence, we are called upon to report the death also of our treasurer, Dr. Frederick Lee Beckley, Treasurer of the Minnesota State Medical Association for six years, he was again re-elected at the last annual meeting. Those of us who were at the St. Cloud meeting saw our friend, Dr. Beckley, who seemed in the best of health and just as keen for a round of his favorite game of golf as he ever was.

Dr. Beckley attained the enviable position he held in his community and among his professional associates through his real worth. As president of the Minnesota Transfer state bank, he was active in the business life of the Merriam Park district of St. Paul, as well as serving it professionally.

Those of us who knew Dr. Beckley will always remember that he played the game of life fairly and played it well. What more can be said of a man?

OBITUARY

DR. ARCHIBALD MacLAREN

Dr. Archibald MacLaren, leader of long standing in the medical profession in St. Paul and the Northwest, died early Sunday, October 12, at his home, 353 Summit avenue.

Death was due to an affliction of the heart, with which he had been suffering for two years, but which did not become acute until recently. Until serious illness overtook him he carried on the practice of surgery and the duration of his service to the profession placed him among St. Paul's oldest surgeons.

Long service and widely recognized abilities imposed many distinctions on him. He was chief of the staff of St. Luke's hospital, member of the staff of the Miller hospital, fellow of the American College of Surgeons, member of the American Surgical Association and the American Medical Association, state and county medical associations and he had been associate attending surgeon at the University hospital and professor of surgery at the University of Minnesota. He was president of the Minnesota State Medical Association at the time of his death.

Dr. MacLaren was born in Red Wing in 1858 and, with the exception of the years given over to education, he remained virtually all of his life in this state. When he was 10 years old he came to St. Paul with his father, General Robert N. MacLaren, celebrated Indian fighter, who was one of St. Paul's influential citizens in the days when the frontier was near at hand.

Dr. MacLaren received his early education in St. Paul grade and high schools and his academic preparation for medical study at Princeton university, from which he was graduated in 1880. He received his professional education at the College of Physicians and Surgeons of Columbia university. Then for two years he was an iuterne in the New York Women's hospital, after which he returned to St. Paul.

His first professional association was with Dr. Edward C. Spencer in 1885. Later he was associated with Dr. C. A. Wheaton, with whom he practiced until 1896. Two years later he joined with Dr. Harry P. Ritchie, and that association grew until at the time of Dr. MacLaren's death, it included Drs. MacLaren, Ritchie, Louis E. Daugherty and Harry Oerting.

Surviving him are the widow, who before her marriage in 1889 was Miss Katherine Dean; three children, Margaret, Katherine and Archibald MacLaren, and a sister, Mrs. George E. Ingersoll.

DR. HORACE H. WITHERSTINE

Dr. Horace H. Witherstine, 72 years old, prominent Rochester physician and former state senator, was killed Thursday, October 2, when the car in which he was driving skidded and turned over on a highway two miles north of town. Dr. Witherstine was alone in the car when the accident occurred and was on his way to make a rural call.

Dr. Witherstine for many years practiced medicine in Olmsted county and always took a prominent part in politics in that district. He was elected to the state senate in 1902 and was re-elected four years later. He also served two terms as mayor of Rochester in addition to serving as alderman and member of the school board at various times. In 1916 he was democratic nominee for congress from his district.

Dr. Witherstine was born at Herkimer, N. Y., April 14, 1852. His early life was spent on a farm and later he taught school for 10 years. In 1882 he began the study of medicine and was graduated from Rush Medical College, Chicago, in 1886, later locating in Rochester.

Dr. Witherstine for several years was editor of the Rochester Bulletin, which is now owned and operated by his son, Glenn. Besides this son he is survived by his widow, one other son, Dr. William H. Witherstine, Grand Forks, N. D., and Mrs. Russell Drake, of Rochester, a daughter.

DR. HENRY EDWIN DOUGLASS

Dr. Henry Edwin Douglass was born at Napanee, Ont., on February 14, 1868. His preliminary education was obtained in the Napanee Collegiate Institute and his medical education in the Medical Department of Queen's University, at Kingston, Ont., from which he graduated in 1892. He began his professional life at Morrisville, Vt., locating there five years before going to Iowa. For fourteen years he practiced at Independence, Ia., and the following four years at Hutchinson, Minn. His Minnesota certificate was issued in 1914. He served twenty-three months in the U. S. Army Medical Corps. For the past five years he resided at Blackduck, Minn., and was active in practice up to two or three days before his death, which occurred on June 14th of this year from acute dilatation of the heart. For the past four years he has been a member of the Upper Mississippi Medical Society and the Minnesota State Medical Association. He is survived by his wife, Mrs. Mabel Douglass, and daughter, Agnes. The funeral was held from his home at Blackduck, under the auspices of the Masonic Lodge, and remains interred in the Lakeview Cemetery.

IN MEMORY OF DR. ROBERT HYNDMAN MULLIN

The Administrative Board of the Medical School learns with regret of the death of Dr. Robert Hyndman Mullin, formerly a member of this faculty, an associate professor of pathology and bacteriology, and an officer of the Minnesota State Board of Health.

He did valuable service for the Medical School during the years of his association with it. He was an earnest teacher, a good executive, a competent laboratory director. He gave himself unsparingly to the promotion of medical education and public health.

The faculty extends to his family the sympathy of its many members who remember Dr. Mullin kindly for his many sterling qualities and gratefully for the educational service he rendered to the State of Minnesota.

E. P. Lyon,
Dean.

Richard Olding Beard,
Secretary.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

THE STATE MEETING

The annual meeting of the Minnesota State Medical Association was held at St. Cloud October 8, 9 and 10, 1924. The registration was 310 of the total membership of 1,952 in the Association. While this registration was the smallest for several years, the attendance at the various scientific meetings was fully as good as usual. This may be accounted for by the fact that most of those in attendance stayed for a longer portion of the program than is usually the case when the meeting is held in the Twin Cities.

In the House of Delegates the matter that received most discussion was the advisability of a full time secretary, a matter which has been brought up from time to time and a step which undoubtedly would react to the benefit of the Association. The expense of such a step makes it prohibitory without a substantial increase in the state membership dues. There was considerable opposition to any increase in dues and so the matter of securing an executive secretary, who will be able to devote more time to field work, was left to a committee appointed by the Council.

The desirability of employing a full time secretary is doubted by no one acquainted with Association activities. Few perhaps realize the amount of detail work which the affairs of an association of physicians numbering close to 2,000 entails. The present executive secretary has developed a fine system of bookkeeping and files for handling the secretarial work and the Association has been fortunate in having such competent service.

The program this year was excellent. Few physicians plan to be present at the opening and closing addresses of a convention and this year was no exception. The last session was a combined meeting and the attendance dwindled pitifully. Most of the members had to leave early in order to get home for dinner at a seasonable hour. It will be interesting to see how the recommendation of the House of Delegates, that there be more combined meetings and more clinical presentations next year, will work out.

The approval of the lay journal known as the Northwest Health Journal and published by the Minnesota Public Health Association was voted by the House of Delegates. It was also voted to continue the appropriation for assisting in the Public Health Exhibit at the State Fair next year.

The following officers were elected for the year 1925:
President—W. L. Burnap, M.D., Fergus Falls.
First Vice President—A. S. Hamilton, M.D., Minneapolis.
Second Vice President—John Libert, M.D., St. Cloud.
Third Vice President—C. W. More, M.D., Eveleth.
Secretary—Carl B. Drake, M.D., St. Paul.
Treasurer—F. L. Beckley, M.D., St. Paul.

COUNCILORS

First District—G. S. Wattam, M.D., Warren.
Fourth District—W. H. Condit, M.D., Minneapolis.
Seventh District—F. A. Dodge, M.D., Le Sueur.

DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

Delegate—J. L. Rothrock, M.D., St. Paul (2 years).
Alternate—J. G. Cross, M.D., Minneapolis (2 years).
Delegate—T. L. Chapman, M.D., Duluth (2 years).
Alternate—Theo. Bratrud, M.D., Warren (2 years).

The invitation extended by Minneapolis to hold the convention there next year was accepted. The time tentatively determined upon by the Council was the second week in October.

LYMANHURST AND PARKVIEW STAFF MEETING

The regular monthly meeting of the Lymanhurst and Parkview medical staffs will be held at Lymanhurst School, 1800 Chicago Avenue, Minneapolis, Tuesday evening, November 25, at 7:00 o'clock.

Following is the program for the evening:
"Tuberculosis and Diabetes," Dr. L. F. Richdorf.
"Diet and General Therapy in Tuberculosis in Children," Dr. Fred W. Schlutz.
"Pleural Effusions and Operative Procedures in Tuberculosis and Other Closely Allied Conditions in Children," Dr. E. J. Huenekens.
"Intestinal Tuberculosis and Closely Allied Conditions in Children," Dr. Rood Taylor.

All persons interested in tuberculosis are invited to attend these meetings and participate in the discussions.

MINNESOTA MEDICAL ALUMNI ASSOCIATION

A meeting of the Minnesota Medical Alumni Association was held in St. Cloud on October 10, 1924. President Dr. Paul B. Cook was in the chair.

The following officers for the ensuing year were elected:
Dr. O. N. Meland, Warren, Minn., President.
Dr. J. Warren Bell, Minneapolis, Vice-President.
Secretary and Treasurer, as formerly, Dr. Donald Daniels, Minneapolis.

Dr. E. P. Lyon, dean of the medical school of the University, addressed the meeting and discussed some of the problems confronting the medical school and medical education in general.

The President, Dr. O. N. Meland, appointed the following men to fill vacancies occurring upon the Advisory Committee to serve for a period of three years:

Dr. S. P. Rees, Minneapolis; Dr. E. L. Tuohy, Duluth; Dr. Paul B. Cook, St. Paul; Dr. Carl O. Estrem, Fergus Falls. Also as Medical Representative at Large, Dr. S. E. Sweitzer, Minneapolis. J. WARREN BELL, Acting Secretary.

AMERICAN WATER WORKS ASSOCIATION MINNESOTA SECTION

The fourteenth annual meeting of the Minnesota Section of the American Water Works Association will be held in the main engineering building, room 305, at the University of Minnesota, November 14, 1924. The session begins at 9:30 A. M. and the program includes subjects pertaining to public health questions which will be of interest to the medical profession.

The subjects which will be discussed include: "Problems Dealing With the Elimination of Lubricating Oil in the Water Supply Which Has Been Introduced Through the Pumping Equipment," "Stream and Lake Pollution," and "Simple Goiter: Its Prevalence and Prevention."

OF GENERAL INTEREST

Dr. Harry T. Frost, formerly of Hallock, has moved to Crookston for the practice of his profession.

Dr. W. F. Bleifuss, Rochester, has discontinued his work as city health officer at Rochester, and plans to retire from medical practice entirely the first of this month.

Dr. Fred W. Behmler, formerly of Lafayette, has taken over the practice of Dr. M. J. Fiksdal at Appleton, Minnesota, where he has been located since September.

Dr. Carl M. Oberg, Minneapolis, with his wife and daughter, Margaret, has returned from a five months' trip in Europe. Dr. Oberg spent two months in the eye and ear clinics of Vienna.

Dr. Robert Emmett Farr read a paper before the Linn County Medical Society, September 11, at Cedar Rapids, Iowa, and another before the Pennsylvania State Medical Association meeting at Reading, Pa., October 8th.

Dr. Arthur Margot, formerly Pathologist and Director in Charge of the Milwaukee County Laboratories, Milwaukee, Wis., has recently accepted the position of Pathologist and Director of the Clinical Laboratory with the Sioux Falls Clinic, Sioux Falls, S. D.

Dr. George E. Fahr, Minneapolis, read a paper on "The differential diagnosis of rheumatic fever and subacute bacterial endocarditis" before the meeting of the Minnesota Pathological Society, held at the Institute of Anatomy building, University of Minnesota, Tuesday evening, October 21.

The new Hudson-Towers hospital-hotel in New York City, representing an investment of $3,500,000, is nearing completion. This new hospital-hotel combination is to be an open hospital and will meet a definite need. The unique combination of hospital for the sick and hotel for the relatives is particularly needed in New York, where such a large percentage of the population lives in hotels.

The 1924 roll call of the American Red Cross, to enroll members for 1925, will be held from Armistice Day to Thanksgiving Day, November 11 to 27. The membership this year is well over three and a quarter millions, with an additional junior membership of five and a half millions. The service of the American Red Cross is increasing and daily proving its value and it is felt that increase in membership is essential to its proper development.

Announcement has been received of the Warren Triennial Prize to be awarded for the best dissertation considered worthy of a premium on some subject in Physiology, Surgery, or Pathological Anatomy; the arbitrators being the General Executive Committee of the Massachusetts General Hospital, Boston. The prize was founded by the late Dr. J. Mason Warren in memory of his father.

The rules of the competition are as follows:

Dissertation must be either in the English, French, or German language, and must be typewritten and suitably bound, so as to be easily handled. Work that has been published previously will not be considered in competition. The name of the writer must be enclosed in a sealed envelope, on which must be written a motto corresponding with one of the accompanying dissertation. The amount of the prize for the year 1925 will be $500.00. Dissertations will be received until April 15, 1925, and should be sent to Dr. Frederic A. Washburn, director of the Massachusetts General Hospital.

University News.—More than $3,000,000 for the support and extension of instruction in medicine, nursing, and allied fields, has been received as gifts by the University of Minnesota in the past 12 years, President L. D. Coffman told those who attended the cornerstone laying for two hospital units on the University of Minnesota campus, Wednesday, October 1.

He enumerated these gifts as follows:

$120,000 from the heirs of Dr. Adolphus F. Elliot for the Elliot Memorial hospital.

$42,000 from various Minneapolis citizens for the hospital site.

$1,500,000 from the Mayo Clinic to be used as the Mayo Foundation, which sum has been increased by accumulated earnings to $2,090,000.

$1,000,000 from William Henry Eustis for a hospital and home for crippled children. (Final payment to be made by July 1, 1927.)

$20,000 from Mrs. Frank C. Todd, $20,000 from Mrs. E. C. Gale, and $5,000 from Mrs. Emery Mapes for the Todd Memorial Eye, Ear, Nose, and Throat hospital.

$250,000 from the Citizens Aid Society of Minneapolis for the George Chase Christian Memorial Cancer Institute.

President Coffman sketched the history of medical education at Minnesota during the past 12 years and said that the erection of Elliot hospital marked an era in the life of the Medical School.

"Another era was begun," he said, "when Drs. W. J. and Charles Mayo gave to the university $1,500,000 with the understanding that the interest from this endowment would be converted back into the principal until the total reached $2,000,000, and with the further understanding that the income would be devoted thereafter perpetually to research in the fields of medicine and surgery. Two years ago this magnificent gift with its accumulated earnings reached the sum of $2,090,000, which means that the University has annually from this source alone more than $100,000 for the study of problems relating to human health.

"Although the Mayo Foundation has been in existence since 1915, from the very beginning the Mayo Clinic has contributed out of its resources between $200,000 and $300,000 a year to the Foundation for the scientific study of human diseases. Today we are expending approximately $350,000 a year, which is the income from the Mayo Foundation and the annual gift of the Mayo Clinic, to maintain graduate work in medicine and surgery at the University of Minnesota. In this respect, Minnesota is unparalleled among the medical schools of the world.

"For twelve years Elliot hospital has stood alone. Now, again, we come together to celebrate the laying of the cornerstones of two new hospital units," he said, "one for diseases of eye, ear, nose, and throat, made possible by the gifts of Mrs. Todd, Mrs. Gale, and Mrs. Mapes, supplemented by funds of the University, and the other to be devoted to the study of cancer, made possible by a gift of $250,000 by the Citizens Aid Society, which was founded by Mr. George Chase Christian. These two new hospitals mark another step in the development of medical education at the University of Minnesota."—University of Minnesota News Bulletin.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ABBOTT LABORATORIES:

Metaphen

Metaphen Solution 1:5,000

SWAN-MYERS COMPANY:

Sterile Ampules of Mercury Benzoate, 2 per cent

Sterile Ampules of Mercury Biniodide (Oil Solution)

Sterile Ampules of Mercury Salicylate, 0.097 Gm. (1½ Gr.)

Sterile Ampules of Mercury Salicylate, 0.065 Gm. (1 Gr.)

Sterile Ampules of Mercury Succinimide, 0.01 Gm. (⅙ Gr.)

NEW AND NON-OFFICIAL REMEDIES

Medicinal Dyes.—The dyes which are used in medicine may be divided into five classes: (1) the azo dyes, of which scarlet red medicinal and scarlet red sulphonate are described in New and Non-official Remedies; (2) the acriflavine dyes, such as acriflavine, neutral acriflavine and proflavine; (3) the fluorescine dyes, usually combined with metal mercury such as mercurochrome—220 soluble and flumerin; (4) the triphenolmethane or rosaniline series, such as gentian violet, crystal violet, methyl violet and fuchsin; and (5) miscellaneous dyes, such as methylene blue, phenolsulphonephthalein and tetrabromphenolphthalein. In order to obtain comparable results when employed clinically, dyes should be of constant composition. The triphenolmethane (rosaniline) dyes include fuchsin and the closely related violet dyes, gentian violet, crystal violet and methyl violet. Of these, gentian violet is the one that has been used chiefly in medicine. It is stated to have the property of great penetration; to be bactericidal also bacteriostatic in vivo toward selective organisms. Its chief use has been in the treatment of infections of the pleural cavity and of the joints. The intravenous use of gentian violet has also been proposed in staphylococcus septicemia, chronic cystitis, osteomyelitis.

Gentian Violet Medicinal.—A mixture of pentamethylpararosaniline and hexamethylpararosaniline chlorides. For direct application, a solution of from 1:500 to 1:1,000 may be employed; for instillation, a 1:10,000 solution. For intravenous use, 5 Mg. per Kg. of body weight, injected in 0.5 per cent solution has been used.

Gentian Violet Improved Medicinal.—A brand of gentian violet medicinal-N:N.R. Coleman and Bell Co., Norwood, Ohio.

Gentian Violet Medicinal-"National."—A brand of gentian violet medicinal-N.N.R. National Aniline and Chemical Co., New York.

Insulin-Stearns Quadruple Strength.—Insulin-Stearns (see Journal A.M.A., June 14, 1924, p. 1937) marketed in 5 c.c. vials containing forty units in each c.c. Frederick Stearns & Co., Detroit.

Sulpharsphenamine-Squibb, 1 Gm. Ampules.—Each ampule contains sulpharsphenamine-Squibb (see New and Non-official Remedies, 1924, p. 68) 1 Gm. E. R. Squibb & Sons, New York.

Sulpharsphenamine-Squibb, 3 Gm. Ampules.—Each ampule contains sulpharsphenamine-Squibb (see New and Non-official Remedies, 1924, p. 58) 3 Gm. E. R. Squibb & Sons, New York.

Diphtheria Toxin-Antitoxin Mixture (new formula).—Diphtheria toxin-antitoxin mixture-Squibb (see New and Non-official Remedies, 1924, p. 298) marketed in packages of thirty 1 c.c. ampules. E. R. Squibb & Sons, New York.

Antistreptococcic Serum-Squibb.—Antistreptococcic serum-Squibb (see New and Non-official Remedies, 1924, p. 305), marketed in packages containing one 10 c.c. syringe; in packages containing one 50 c.c. vial. E. R. Squibb & Sons, New York.

Antistreptococcic Serum Rheumatic-Squibb.—Antistreptococcic serum rheumatic-Squibb (see New and Non-official Remedies, 1924, p. 305), marketed in packages of one 20 c.c. vial; in packages of one 50 c.c. vial. E. R. Squibb & Sons, New York. (Journal A. M. A., Sept. 6, 1924, p. 767.)

Ampules Pituitary Solution Wilson, 0.5 c.c.—Each ampule contains pituitary solution-Wilson (see New and Non-official Remedies, 1924, p. 229) 0.5 c.c. Wilson Laboratories, Chicago.

Thiosinamine.—Thiosinamina. Allylthiourea. Thiosinamine is being used against arsphenamine dermatitis. This use is still in the experimental stage. Thiosinamine was originally introduced to promote absorption of scar tissue, lymphatic swellings, etc. Its restricted use indicates that it has little if any value for this purpose. Although it is usually well borne, except for its bitter taste and acid eructation, it may produce toxic systemic effects, and these may set in suddenly after it has been used for a time without toxic effects. (Journal A. M. A., Sept. 13, 1924, p. 843.)

Oridine.—The calcium salt of the iodized fatty acids of cottonseed oil. It contains from 23 to 25 per cent of iodine in organic combination. Oridine acts in the system similarly to the inorganic iodides. The iodized fatty acid radicle of oridine is not decomposed in the stomach but a part of the iodine is split off when it enters the intestine. The undecomposed portion is readily absorbed and, as in the case of other fats, it is largely deposited in the tissues where it is slowly split up. As with other iodized fats, the action of oridine is exerted more slowly than that of the inorganic iodides. Oridine is marketed in powder and as oridine tablets for the prophylaxis of goiter, containing oridine equivalent to iodine 0.01 gm. Eli Lilly & Co., Indianapolis. (Journal A. M. A., Sept. 20, 1924, p. 921.)

Rabies Vaccine (Human), Phenol Killed.—An antirabic vaccine (see New and Non-official Remedies, 1924, p. 306) prepared according to the general method of David Sempel. The product as sold contains brain substance 2 per cent and phenol 0.5 per cent suspended in physiological sodium chloride solution. It is marketed in packages of fourteen vials and a syringe, and in a package containing 21 vials

and a syringe. Jensen-Salsbery Laboratories, Inc., Kansas City, Mo. (Journal A. M. A., Sept. 27, 1924, p. 1001.)

PROPAGANDA FOR REFORM

BioFood.—This is a "patent medicine" combination put out by a concern that seems to go under various names: "Biochemical Food Products Corporation," "Bio-Products Company," and "BioFood Corporation." BioFood has been shrewdly and cleverly marketed. The impression is given that the stuff is a food and not a medicine. Its high price—ten dollars a treatment—impresses the public with its value. The treatment consists of a box labeled "A" and two bottles labeled, respectively, "B" and "C." BioFood is sold with the claim that our bodies are composed of twelve tissues containing sixteen elements, that our foods are deficient in these elements and that BioFood supplies this deficiency and thus "builds up the body by supplying all the elements which nature intended man to have and thus gives nature a chance to create her own antitoxins and effect a cure." BioFood has been advertised extensively in newspapers, in self-styled medical journals and by cruelly mendacious advertisements in the Chicago street cars. The A. M. A. Chemical Laboratory reports that BioFood "A" may be considered to be composed essentially of milk sugar and flavoring in which have been incorporated small amounts of iron, calcium and manganese salts and phosphate, either as such or in combination such as glycero-phosphate. The Laboratory found BioFood "B" to be tablets which may be considered to consist essentially of potassium acetate, sodium chloride, sodium sulphate and sodium citrate. BioFood "C" was a liquid resembling solution of iron and ammonium acetate, U. S. P., modified by the addition of very small amounts of calcium, magnesium and sodium and phosphate compounds. (Journal A. M. A., Sept. 6, 1924, p. 782.)

Mercurochrome-220 Soluble and Gentian Violet Intravenously.—Reports on the intravenous use of mercurochrome-220 soluble and of gentian violet have been published. These drugs, when administered intravenously, are used in recently prepared aqueous solution. Of mercurochrome, 5 mg. per kg. of body weight appears to be generally used. It is used in a one per cent solution. Of gentian violet, 0.25 per cent of an aqueous solution is used; the dosage being 5 mg. per kg. of body weight. Mercurochrome-220 soluble marketed by Hynson, Westcott & Dunning, Baltimore, gentian violet medicinal-"National" of the National Aniline and Chemical Co., New York, and gentian violet improved medicinal of Coleman & Bell Company, Norwood, Ohio, have been accepted for New and Non-official Remedies. (Journal A. M. A., Sept. 20, 1924, p. 942.)

Hectine.—Hectine is said to be sodium benzosulphoaminophenyl-arsenate and, therefore, is similar in composition to the product "Atoxyl." Atoxyl is one of a class of arsenical preparations, the use of which has been generally discontinued in favor of the products of the arsphenamin type. Hectine has not been accepted for New and Non-official Remedies, nor has the American agent, George J. Wallau, Inc., requested such recognition by the Council on Pharmacy and Chemistry. (Journal A. M. A., Sept. 20, 1924, p. 942.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

SUPERVISORS:
CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS
ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

MEDICINE

SUPERVISORS:
F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

RESULTS OBTAINED IN THE TREATMENT OF NON-PULMONARY TUBERCULOSIS: H. O. West (Tubercle, London, 1924). "Does the pulmonary specialist have a greater percentage of cures, i.e., quiescent cases, or, in short, have a greater average of good results than the specialist in non-pulmonary tuberculous cases?" The specialist in the non-pulmonary field claims that he is at a disadvantage when his results are compared with the results in the pulmonary field.

The non-pulmonary specialist has not only to contend with a general infection, a local morbid process and therefore to consider the arrest and the quiescence of the disease both general and local, but, in addition to these, he has to consider the functional orthopedic results. He can claim a case as "disease quiescent" and at the same time the functional result may be a failure. The case may be as follows:

A woman with pulmonary disease may recover with the loss of one lung and still live a long and useful life in her family. But should a man have an arm amputated he is immediately handicapped. No invention to date can overcome the handicap. Similarly, ankylosis of hip joints with faulty positions from tuberculous disease can not be said to be a very credible result. Yet in the few cases named they will be classified as "disease quiescent," and after two years as "disease arrested."

Comparing the "end" results of pulmonary cases and non-pulmonary, we find that in the pulmonary cases the "end" results are becoming more available for statistical reports. In the non-pulmonary the tubercular process may be arrested, but the orthopedic results are less flattering.

When we come to consider the statistics of the results of actual institutional treatment two important points at once appear:

The first is that the proximate, though not the remote, results are vitiated by the inclusion of cases which are

admitted with the disease already soundly arrested. This undoubtedly occurs.

The second point is that while comparisons are always odious, they are impossible unless like is compared with like, and it is therefore futile to compare the proximate results (and in any case I do not propose to offer any comparisons) of an institution which picks its cases and one which admits all and sundry. In one American institution the policy has changed from mixed cases to picked cases, so that the basis of results has altered. A uniform system must similarly be adopted as to "relapse" cases.

For example, a classification has been adopted by the metropolitan Asylums Board whose main groups are:

Active disease, with slight deformity
Active disease, with considerable deformity
Active disease, with abscess
Disease with sinus formation
Disease of long standing

To pass finally to the more important remote results. The difficulty of obtaining reliable after-history information year after year is notorious. Some records of pulmonary cases exist and are classical, but the serious thing is that the surgical officer may go on in blissful ignorance of the fact that although he is quite happily rejoicing in his 75, 80 or 90 per cent of "disease quiescent" proximate results, a proportion which may be far from flattering is falling by the wayside with relapses or with steadily degenerating orthopedic results and drifting off into other institutions. This, of course, happens to all of us. It happens especially in all branches of surgery. The surgeon comparatively rarely sees his failures. They go elsewhere.

To summarize—the following general statements about the results of the treatment of non-pulmonary tuberculosis will eventually be supported statistically:

1. That the proximate result of prolonged institutional treatment is to bring about quiescence of the disease in at least 75 per cent of all cases of non-pulmonary tuberculosis.

2. That this result will be maintained in the after history of not less than the same percentage of all cases.

3. That the length of treatment required varies almost directly with the promptitude with which treatment is given after early diagnosis.

4. That the expectation of life will not seriously be diminished in early cases suitably treated, and that diminution will be due essentially to any resulting crippling.

D. Fleming.

THE CASE AGAINST GASTRO-ENTEROSTOMY: Donald C. Balfour (Jour. Amer. Med. Assoc., Aug., 1924). The results of gastro-enterostomy for duodenal ulcer were studied so that the procedure might be compared with the more radical operations which are now being advocated by European and American surgeons.

Sherren, the London surgeon, reported satisfactory results in 92.6 per cent of 500 cases, two or more years after operation. He also stated that "patients who go for two years without symptoms never develop them later."

One thousand patients who were operated on ten years or more ago, were the basis of the study reported in this article. Nine hundred and eighty-six patients had complained of pain before operation; only ninety reported a return of pain in any degree and only twenty-two of these considered it sufficient to return for re-examination.

Vomiting was a symptom in 611 of these cases before operation, and only twenty-five reported any recurrence of this symptom. Hematemesis, melena, or both occurred in 286 cases before operation, and recurred post-operatively in only 57 cases (5.7 per cent). Recurring ulcer, whether in the duodenum, stomach, or stoma, was reported in 3.5 per cent of the cases. Subsequent perforation did not occur in any case. Eighty-eight per cent of the patients were entirely relieved of the symptoms for which they sought aid.

An investigation by the Actuarial Society of America disclosed the fact that the life expectancy of people who had had gastro-enterostomies for duodenal ulcer was greater than that of the general population.

The operative mortality was less than two per cent. The failures of gastro-enterostomy are due to: (1) the performance of that operation without definite indication, (2) failure to remove attendant infections in the abdomen, infected teeth and tonsils, (3) coexistence of functional derangement of the stomach, and (4) coexisting pulmonary or cardiovascular disease in which cases a gastro-enterostomy may be ill advised. Other causes of disappointing results are: (1) a young patient, (2) a short and atypical history, (3) the "constitutional inferiority" type of individual, (4) a small ulcer without obstruction, (5) bad habits of living, and (6) technical errors at the time of operation. Failure to recognize the cases in which a disturbance of motor function of the upper gastrointestinal tract results in severe toxemia is a cause of an unnecessary mortality in this group of cases.

Sherren reports that the persistence of high acids after gastro-enterostomy is intimately connected with the production of ulcer.

In closing, the writer states that at present there is no conclusive evidence that there is any operation more useful than gastro-enterostomy in cases of duodenal ulcer and also that the gastro-enterostomy can be disconnected with ease and safety after the ulcer has healed, if desired.

W. P. Herbst.

SURGERY

SUPERVISORS:
DONALD K. BACON,
LOWRY BLDG., ST. PAUL
VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

THE PRESENT STATUS OF THE SURGICAL TREATMENT OF CHRONIC DUODENAL AND GASTRIC ULCER: Chas. H. Peck (Ann. of Surg., July, 1924). The success of the gastro-enterostomy to relieve symptoms lies in the fact that the irritating character of the stomach con-

tents becomes less and that it short-circuits the stomach contents and permits healing of the ulcer.

Chronic gastric ulcers should be managed differently than ulcers of the duodenum. The eradication of the ulcer should be a part of the operative procedure.

If the ulcer is near the pylorus, the author favors excision or destruction of the ulcer by the actual cautery, then to proceed with a gastro-enterostomy.

In gastric ulcers with marked inflammatory reaction, adhesions, and a patient in poor condition, it is sometimes advisable to make a gastro-enterostomy and a second stage for resection, if necessary.

Mid-gastric ulcers will frequently respond better to a trans-gastric resection than to a gastro-enterostomy.

In chronic ulcers of the duodenum and stomach, the choice of operation is very important and depends largely upon the type of ulcer; hence the author has divided them into four general classes.

1—Single anterior ulcers of the duodenum which may be treated by local excision.

2—Chronic indurated ulcers without obstruction, single, multiple and perforating, and most of these respond to the simple gastro-enterostomy.

3—Chronic ulcers with obstruction and in these gastro-enterostomy is the operation of choice.

4—Cases with severe hemorrhage, and these are frequently cured by gastro-enterostomy, although in some cases it is necessary to excise the ulcer.

Radical resection should be reserved for cases with:

1—Inflammatory mass or suspected malignancy
2—Cases complicated with gastro-jejunal ulcer (2 per cent)
3—No relief of symptoms following gastro-enterostomy

Success in gastro-enterostomy depends largely on surgical technique and the author's technique is described in detail.

L. D. POWELL.

APPENDICEAL FECAL FISTULA: J. B. Deaver (Ann. of Surg., July, 1924). In this article the author discusses the occurrence of fecal fistula in cases operated upon for acute appendicitis. In the Lankeneau Clinic, appendicitis is grouped acute or chronic, since they find that practically all cases of acute appendicitis are partially or entirely gangrenous. If the gangrenous area is large, the patient frequently has a chill. A chill may also be due to thrombophlebitis of the veins of the meso-appendix and of those into which they drain.

Fecal fistula complicates appendicitis in the cases presenting perforation, abscess and drainage. There were 200 cases of fistulæ in the last 4,063 cases of acute appendicitis, or 5 per cent. In every case pus was present, requiring drainage. Cases showing perforation at the base showed a tendency to fecal fistula formation, owing to the amount of inflammatory reaction and the friability of the tissues relied upon for turning in the stump.

Of the 200 fistulæ, 74, or 37 per cent, healed spontaneously; 97, or 48.5 per cent, required operative repair. The remaining 29 per cent either refused operation or failed to return for operative repair, having been sent home to recuperate. A period of trial for spontaneous closure was given, depending upon the patient's physical condition.

The type of operation depended upon the existing conditions. In 60 per cent of the cases, simple inversion of the fistulous opening by a purse-string linen suture reinforced by an additional suture line was sufficient. In 15 per cent, ileocolostomy was performed after inversion and reinforcement of the fistulæ. This was done in the cases where the regenerative power was doubtful. Twenty-three per cent presented either multiple fistulæ or else the fistula was so large as to preclude closure with maintenance of the lumen. In these resection of the bowel was done and an anastomosis performed.

Eighty of the 97 operated cases recovered and were discharged healed. In eight cases the fistula recurred and nine died after operation. Only 37 per cent of the entire series healed without surgical repair.

F. A. BOTHE.

THE TREATMENT OF ACUTE MECHANICAL INTESTINAL OBSTRUCTION BY TEMPORARY JEJUNOSTOMY: Walter Estell Lee and T. McKean Downs (Ann. of Surg., July, 1924). The seriousness of acute mechanical intestinal obstruction has been recognized for years and known to carry a very high mortality, which is not alone due to the obstruction but to the absorption of toxic material generated in the duodenum, probably from the pancreatic and biliary secretions.

The treatment therefore in these cases must be:

1—Remove toxic material as early as possible.
2—Relieve the distended bowel of its contents, which are paralyzing its musculature.
3—Restore the continuity of the intestinal lumen.

The extent of the surgery to be done depends upon the time the obstruction has been present, cases within twenty-four hours having good chances by relief of the obstruction alone; but cases of several days' duration have a paralytic condition of the intestine as well as the obstruction, so therefore it is better to simply do a high jejunostomy after the method of Witzel, which places a soft rubber catheter into the distended loop. This is done by means of purse-string and then the catheter carried along the gut for two or three inches in a trough-like groove and the serous coats of the intestine brought together over the catheter. After the jejunostomy has been completed, the obstruction proper may be treated if the patient's condition permits, and if not, the release of the mechanical factors may be done as a second stage.

The opening in the jejunum is carried up to and stitched to the parietal peritoneal and after the obstruction is overcome and the tube removed, the opening closes without danger of fistula or other complications.

The contra-indications are practically nil.

L. D. POWELL.

PEDIATRICS

SUPERVISORS:
CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS
ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

MANAGEMENT OF SUMMER DIARRHEAS IN CHILDREN: Carroll M. Pounders (Arch. of Ped., August, 1924): The annual mortality from the diarrheal diseases in children under two years of age exceeds the combined mortality from measles, scarlet fever, pertussis, typhoid and diphtheria at all ages. Artificial feeding is probably the most important single etiological factor. Less than five per cent of the severe cases occur among breast-fed babies and a fatal case is rare in a baby on the breast. The author's greatest difficulty during the summer months is with fermentative and infectious diarrheas.

Fermentative diarrhea is simply a fermentation of the intestinal contents without any attack on the mucosa or other body tissues by the causative organisms. Infectious diarrhea is a definite bacterial invasion of the intestinal walls and other body tissues by some strain of the bacillus dysenteriæ. The condition really should be called bacillary dysentery. In the fermentative type, the abdomen is commonly distended, but there is little pain or tenesmus. In the infectious type, the abdomen is usually flat or sunken. There is often pain and tenesmus and there may be tenderness to pressure along the colon. The character of the stools is different. In the fermentative type, there is usually a green, watery, irritating stool, acid to litmus and showing fermentation. The infectious type of stool is characterized by the presence of pus and blood, very little odor and an alkaline reaction.

The treatment can be discussed under the following headings: (1) initial purgation—that is: oil or magnesia; (2) period of starvation—12 to 24 hours; water freely. This can be given as plain water, barley water or weak tea, preferably barley water, sweetened with saccharin.

Diet: In the fermentative type, the prevalent organisms thrive on a carbohydrate medium. So a food that is high in protein and containing a minimum of fats and carbohydrates is indicated. These requirements are well met by protein milk. It is more readily taken when sweetened with saccharin, using one grain to each quart. The child can be kept on this for some time. When the number of bowel movements approaches the normal, the protein milk can be gradually replaced by boiled skimmed milk. The fats should be withheld for weeks afterwards, as they are very poorly tolerated. In the infectious type, showing blood in the stools, we are dealing with some strain of the dysentery bacillus. Moreover, an excess of carbohydrates tends to inhibit their growth and development. So the indication is distinctly for food composed of carbohydrates and containing very little, if any, fats or proteins. Lactose is the carbohydrate of choice, as it is slowly broken down and is more apt to reach the lower intestinal tract. It is given in a 7 per cent solution. In from one to five days more, depending upon the amount of improvement, small amounts of boiled skimmed milk are cautiously added. This is carefully raised until it replaces the sugar solution. Cream of wheat can be added quite early.

Toxemia, temperature, dehydration and acidosis: Obviously, the indication is to restore the fluid balance. In mild cases, where there is no vomiting and very little diarrhea, sufficient fluids may be given by mouth. More severe cases are controlled by administering normal saline subcutaneously. But if it becomes necessary to give very much fluid, other than by mouth, the intraperitoneal or intravenous route are more satisfactory.

Drugs play a very small part in the treatment.

R. N. ANDREWS.
Mankato Clinic, Mankato, Minn.

EXPERIENCES WITH LACTIC ACID MILK IN INFANT FEEDING: Morris Gleich (Arch. of Ped., August, 1924). Lactic acid milk, in the absence of breast milk, furnishes an excellent substitute for the routine feeding of well and sick babies. Healthy and sick infants, fed lactic acid milk, have peptic digestion to a certain degree. Acid, then, added to cow's milk renders it favorable to peptic, rennin and lipase digestion.

In the preparation of acid milk the method described by Marriott and Davidson was used. One teaspoon of lactic acid (U.S.P.) is added, drop by drop, to a pint of sweet whole milk, which is previously boiled 5 minutes, the scum removed, and allowed to cool. Two tablespoons of karo syrup are then added. In preparing lactic acid milk, the author suggests that a glass rod be used instead of a spoon and that stirring be very slow. It is advisable to stir about six times to every drop of lactic acid added. A tall vessel seems to give finer curd than a flat pan.

A study of lactic acid milk feeding was made in order to note its value and compare results with other methods. The stools were always soft, yellow and pasty, and had no offensive odor. No mucus or blood was observed. In fact, all children were remarkably free from gastrointestinal disturbances. Abdominal distention, present in three children, caused no apparent discomfort.

The high caloric value of lactic acid milk can be best appreciated by considering a sweet milk formula. If a child of 3 months, weighing 11 pounds, takes 19 ounces sweet whole milk, 11 ounces water and 3 tablespoons dextrimaltose, 5 ounces q3h, it received 500 calories. If that same child is fed 5 ounces lactic acid milk q3h its intake is 840 calories (1 qt. 1 a. m. 600 calories plus karo syrup 4 tablespoons, 240 calories).

Conclusions: Lactic acid milk in infant feeding is no panacea. It has a valuable place in the armamentarium of the pediatrician. Lactic acid milk may probably replace protein milk in the severe diarrheas of infancy. By increasing gastric acidity, it may play an important role in the prevention and treatment of rickets and tetany.

R. N. ANDREWS.

NEW EVIDENCE ON CALCIUM THERAPY IN TUBERCULOSIS: (New York Intravenous Laboratory, 100 West 21st Street, New York).

The value of calcium in tuberculosis has been the subject of much debate. On one hand existed the opinion of the practitioner, based on isolated cases. On the other, and opposed to it, was the academician, who, by animal experiments, was unable to demonstrate the clinical effect claimed by the practitioner. A few clinicians were inclined to believe in the value of calcium, but were unable to demonstrate sufficiently uniform results to enable them to come to definite conclusions as to its value.

This state of knowledge of the value of calcium is not unique in therapeutics. The same condition exists as to the value of other remedies, used empirically and administered by mouth.

A change of opinion as to the value of calcium has been brought about by the intravenous administration. Loeser, in his research work with a number of U. S. P. and standard remedies, ascertained that Calcium Chloride and Calcium Guaiacol Sulphonate, and other calcium salts are adaptable to intravenous administration.

Since the standardization and the commercializing of Loeser's Intravenous Solution of Calcium Chloride, many practitioners and a number of clinicians have proved conclusively that calcium is of great value in tuberculosis. During the last three years an increasing number of articles have appeared in the J. A. M. A. and in other medical journals on the subject. The American Review of Tuberculosis published in their April Number an article on Calcium Chloride in tuberculous enteritis. This is a report of clinical work done in the Fitzsimmons General Hospital, Denver, Colo., and was published by permission of the Surgeon General.

C. A. Stewart.

GYNECOLOGY AND OBSTETRICS

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THE CONTRA-INDICATIONS TO RADIUM IN THE TREATMENT OF DISEASE OF THE FEMALE PELVIS: F. E. Keene (Amer. Jour. of Ob. and Gyn., August, 1924). The author discusses the contra-indications to radium in the treatment of diseases of the pelvis. Except for a few broad statements, this paper is confined to benign lesions.

Two facts stand out in observation on these cases: (1) In properly selected cases the advent of radium marks a great epoch of advance in the realm of gynecological therapeutics. (2) A sharp dividing line exists between the types of cases suitable for radiation or operation.

In dealing with cancer of the cervix early operation supplemented by irradiation is the method of choice. In advanced cases, especially those with extension, it is thought unwise, as even palliation cannot be hoped for, and irradiation may add suffering to the patient's already miserable condition. What a combination of radium and deep *x*-ray therapy offers is still an open question. While only early lesions of the cervix are operated upon, operation is employed in fairly advanced fundal carcinomata applying radium ten and fourteen days later.

In discussing the contra-indications to radium in benign lesions, the remarks are limited to cases of myomata and so-called myopathic hemorrhages.

The contra-indications are:

1—*Tumors larger than three months pregnancy.*
Frequently adnexal and intestinal pathology and extensive degenerative changes are found and the already limited blood supply further impaired.

2—*Rapidly growing tumors suggesting sarcoma or actively progressing benign changes.*

3—*Uncomplicated tumors of any size giving rise to symptoms other than abnormal menstruation.*
Symptoms are usually mechanical in origin as a result of traction or pressure and the tumor disappears too slowly to justify radium therapy.

4—*Tumors associated with pelvic pain.*
Operation is preferable here because the pain is usually due to adnexal disease, usually inflammatory; to degeneration within the tumor or to adenomyomata. Radium excites old pelvic inflammatory conditions and degenerative changes or adenomyomata do not respond favorably.

5—*Pedunculated tumors whether subperitoneal or intrauterine.*
Radium is useless here.

6—*Tumors producing hemorrhage and complicated by demonstrable adnexal pathology.*

7—*The presence of a marked secondary anemia in association with tumors not giving rise to sufficient uterine bleeding to account for the anemia.*
In the three cases observed necrosis of the tumor was found and rapid disappearance of the anemia postoperative.

8—*Tumors in young women.*
Radium sufficient to cause disappearance of the tumor may bring on a menopause and sterility. Doses are justifiable and sometimes beneficial in myopathic hemorrhages.

9—*Tumors so distorting the uterine cavity that introduction of radium well above the internal os is impossible.*
Sufficient radiation of the uterus is impossible and subsequent contraction of the internal os may give rise to hematometra or pyometra. Furthermore, a diagnostic D & C is indicated to rule out an area of malignancy.

10—*Where differentiation between myomata and adnexal pathology cannot be definitely determined.*

11—*Myomata or myopathic hemorrhage in nervous women.*
Menopausal symptoms are probably more acute following irradiation, if they develop, and it is very likely to be the case in nervous women.

12—*In cases of radiophobia.*

F. A. Bothe.

ROENTGENOLOGY

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EFFECT ON THE BLOOD OF IRRADIATION: Minot and Spirrling (Am. Jour. Med. Sci., Aug., 1924). An unusually complete review of the literature is presented together with the results of blood studies on 42 cases of malignant disease receiving various doses of roentgen rays. The effects of both deep and superficial therapy are presented and compared.

The most important findings are:

1. The first effect of radiation is a transient increase of neutrophiles. Following this a leukopenia and lymphopenia develop, the count going below 5,000 frequently about 6 days after intensive therapy. Bone marrow depression is present at this time.

2. The character of the reaction following the newer deep therapy is the same as that following more superficial doses, but it comes on more rapidly, is more intense, and more persistent.

3. Eosinophilia, degenerated leucocytes, and an increase of immature leucocytes appear frequently. Platelets are only slightly affected while there are no important changes in the red corpuscles or the hemoglobin.

4. The clinical condition of the patient is much less important in producing the reaction than the character of the dose. The amount of surface area radiated is of great importance in determining the amount of blood changes which will take place.

5. Although a moderate depression of activity of lymphatic tissue and bone marrow do not have any serious detrimental effects, care should be exercised to determine the degree of leukopenia before radiation and where a study of the formed elements of the blood indicates a severe marrow depression it may be well to consider whether the benefits to be derived from further radiation will offset the disadvantages of increased hemopoietic depression.

LEO G. RIGLER.

MASSIVE COLLAPSE OF THE LUNG: Holmes (Am. Jour. Roent., June, 1924). The most important roentgen findings are as follows:

1. Displacement of heart and mediastinum to the affected side together with a high rigid diaphragm. This may occur in chronic fibrosis of the lung, but the appearance of the affected lung should indicate the diagnosis.

2. Lung in affected area gives a gray mottled shadow with loss of outline of the diaphragm if the lower lobe is involved.

3. The findings simulate collapse of the lung from other causes and the history is necessary to make the definite diagnosis.

Four cases of massive collapse following operation are reported with roentgenograms at different stages of the condition.

LEO G. RIGLER.

THE MINNEAPOLIS GENERAL HOSPITAL offers a Technician's Course in *x*-ray to women having high school diplomas. Course covers a period of eight months. Diploma is issued upon completion of the course. Noon meal furnished. Address Minneapolis General Hospital, Minneapolis, Minn.

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